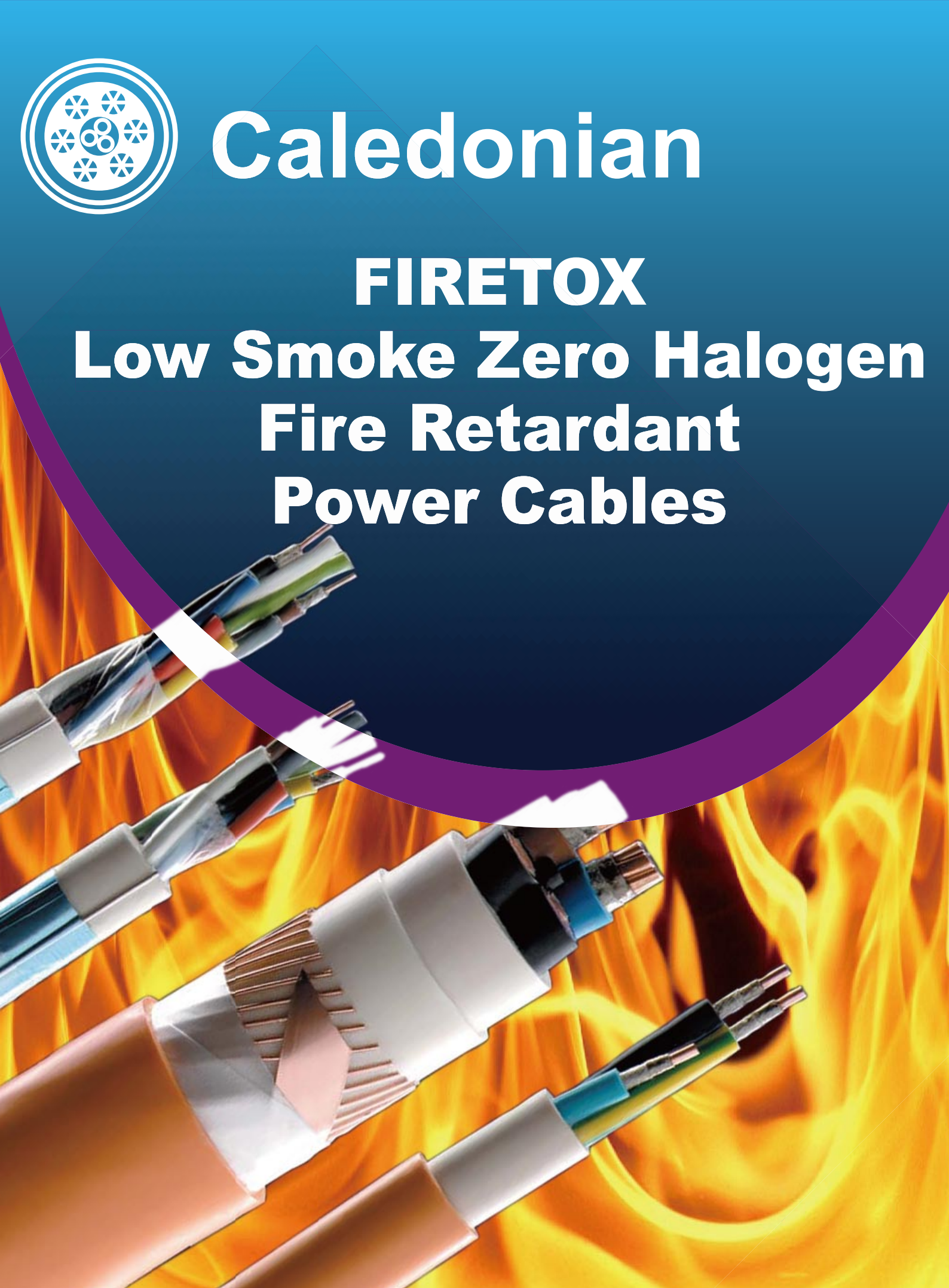
Caledonian

FIRETOX
Low Smoke Zero Halogen Fire Retardant Power Cables



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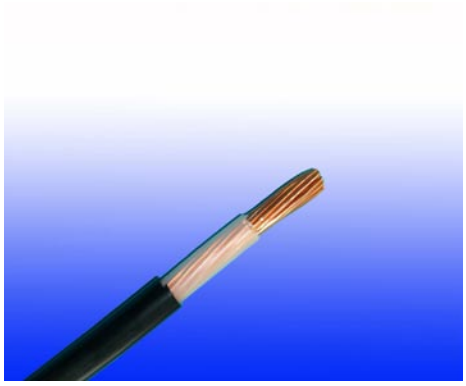
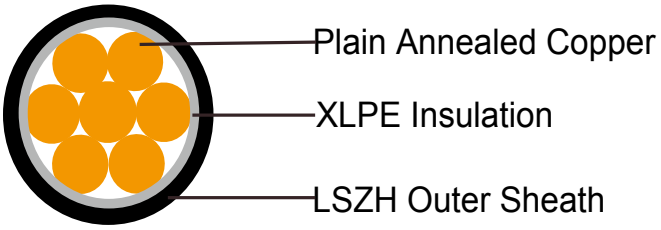




APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design adapted to IEC 60502-1

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

300/500V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC 60228 class 2.
Insulation: Extruded cross-linked XLPE compound.

Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 6 x Overall Diameter

ELECTRICAL PROPERTIES

Dielectric test:	2000 V r.m.s. x 5' (core/core)
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

Conductor		FTX300 05RZ1-R		
No. of Core X Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Overall Diameter	Approx. Weight
Noxmm^2	No./mm	mm	mm	kg/km
1x1.5	7/0.53	0.50	3.8	27
1x2.5	7/0.67	0.50	4.2	37
1x4.0	7/0.85	0.50	4.8	54

ELECTRICAL PROPERTIES

Conductor Operating Temperature : 90°C
Ambient Temperature : 30°C
Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 4 (enclosed in conduit in thermally insulating wall etc)	Reference Method 3 (enclosed in conduit on a wall or in trunking etc)	Reference Method 1 (clipped direct)	Reference Method 11 (on a perforated cable tray, horizontal or vertical)	Reference Method 12 (free air)		
					Horizontal flat spaced	Vertical flat spaced	Trefoil

	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or 3 c ables three phase	2 cables, single-phase a.c. or d.c. or 3 cables three phase	3 cables, trefoil 3-phase a.c.
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.5	18	17	22	19	25	23	-	-	-	-	-
2.5	24	23	30	26	34	31	-	-	-	-	-
4	33	30	40	35	46	41	-	-	-	-	-

Voltage Drop (Per Amp Per Meter)

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.		3 or 4 cables, 3-phase a.c.		
		Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)	Ref. Methods 1 and 11 (clipped direct or on trays touching)	Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)	Ref. Methods 1, 11 and 12 (in trefoil)	Ref. Methods 1 and 11 (Flat and touching)
1	2	3	4	5	6	7
mm^2	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m
1.5	31	31	27	27	27	27
2.5	19	19	16	16	16	16
4	33	12	10	10	10	10

Rated Voltage

Standard

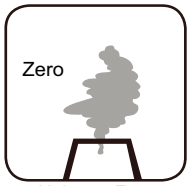

Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1


Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24/EN50266-2-4


Low Toxicity
NES 02-713/NF C 20-454


Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074

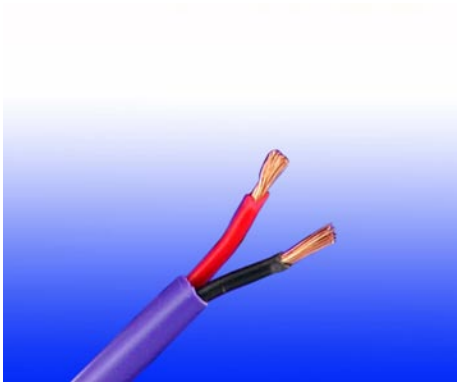

Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

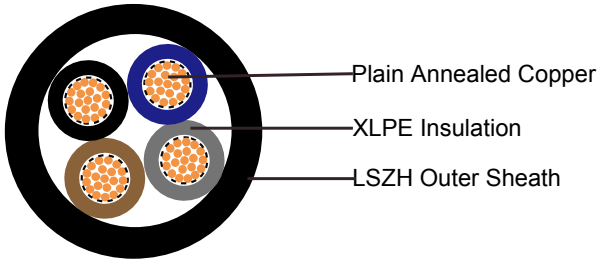


Halogen Free
IEC60754-1
EN50267-2-1

300/500V XLPE Insulated, LSZH Sheathed Power Cables (2-4 Cores)

FTX200 05RZ1-R (CU/XLPE/LSZH 300/500V Class 2)





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design adapted to IEC 60502-1

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

300/500V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC 60228 class 2.
Insulation: Extruded cross-linked XLPE compound.
Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 6 x Overall Diameter

ELECTRICAL PROPERTIES

Dielectric test:	2000 V r.m.s. x 5' (core/core)
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

Conductor			FTX200 05RZ1-R	
No. of Core X Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Overall Diameter	Approx. Weight
Noxmm^2	No./mm	mm	mm	kg/km
2x1.5	7/0.53	0.50	6.5	65
2x2.5	7/0.67	0.50	7.3	91
2x4	7/0.85	0.50	8.4	131
3x1.5	7/0.53	0.50	6.9	81
3x2.5	7/0.67	0.50	7.8	116

Conductor			FTX200 05RZ1-R	
No. of Core X Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Overall Diameter	Approx. Weight
Noxmm^2	No./mm	mm	mm	kg/km
3x4	7/0.85	0.50	9.0	169
4x1.5	7/0.53	0.50	7.6	101
4x2.5	7/0.67	0.50	8.6	144
4x4	7/0.85	0.50	9.9	213

ELECTRICAL PROPERTIES

Conductor Operating Temperature : 90°C

Ambient Temperature : 30°C

Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 4 (enclosed in conduit in thermally insulating wall etc)		Reference Method 3 (enclosed in conduit on a wall or in trunking etc)		Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated cable tray, horizontal or vertical)		Reference Method 12 (free air)		
									Horizontal flat spaced	Vertical flat spaced	Trefoil
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or 3 c ables three phase	2 cables, single-phase a.c. or d.c. or 3 cables three phase	3 cables, trefoil 3-phase a.c.
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.5	18	17	22	19	25	23	-	-	-	-	-
2.5	24	23	30	26	34	31	-	-	-	-	-
4	33	30	40	35	46	41	-	-	-	-	-

Voltage Drop (Per Amp Per Meter)

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.		3 or 4 cables, 3-phase a.c.		
		Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)	Ref. Methods 1 and 11 (clipped direct or on trays touching)	Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)	Ref. Methods 1, 11 and 12 (in trefoil)	Ref. Methods 1 and 11 (Flat and touching)
1	2	3	4	5	6	7
mm^2	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m
1.5	31	31	27	27	27	27
2.5	19	19	16	16	16	16
4	33	12	10	10	10	10

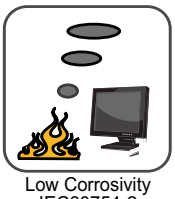
Rated Voltage

Standard

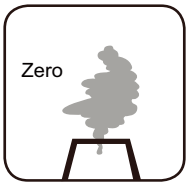

Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1


Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24/EN50266-2-4


Low Toxicity
NES 02-713/NF C 20-454


Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074

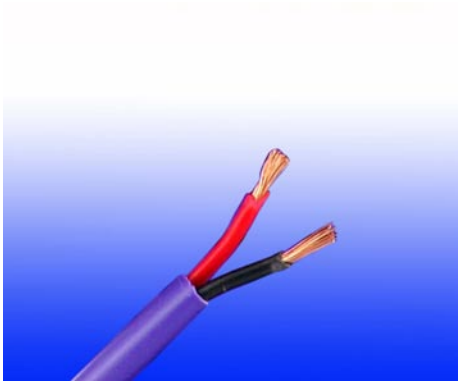

Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

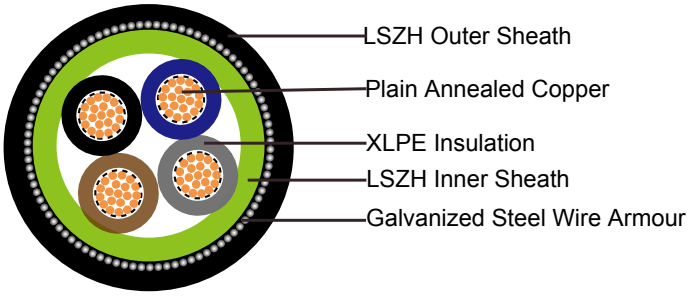


Halogen Free
IEC60754-1
EN50267-2-1

300/500V XLPE Insulated, LSZH Sheathed Power Cables (2-4 Cores)

FTX200 05RZ1MZ1-R (CU/XLPE/LSZH/SWA/LSZH 300/500V Class 2)





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design adapted to IEC 60502-1

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

300/500V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC 60228 class 2.
Insulation: Extruded cross-linked XLPE compound.
Inner Sheath: LSZH Compound
Armouring: Galvanized Steel Wire
Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 10 x Overall Diameter

ELECTRICAL PROPERTIES

Dielectric test:	2000 V r.m.s. x 5' (core/core)
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

Conductor			FTX200 05RZ1MZ1-R			
No. of Core X Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Diameter Under Armour	Armour Wire Diameter	Nominal Overall Diameter	Approx. Weight
			mm	mm	mm	kg/km
2x1.5	7/0.53	0.50	6.5	0.9	11.2	246
2x2.5	7/0.67	0.50	7.3	0.9	12.0	292
2x4	7/0.85	0.50	8.4	0.9	13.1	360

Conductor			FTX200 05RZ1MZ1-R			
No. of Core X Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Diameter Under Armour	Armour Wire Diameter	Nominal Overall Diameter	Approx. Weight
			mm	mm	mm	kg/km
3x1.5	7/0.53	0.50	6.9	0.9	11.6	275
3x2.5	7/0.67	0.50	7.8	0.9	12.5	331
3x4	7/0.85	0.50	9.0	0.9	13.7	413
4x1.5	7/0.53	0.50	7.6	0.9	12.3	309
4x2.5	7/0.67	0.50	8.6	0.9	13.3	380
4x4	7/0.85	0.50	9.9	0.9	14.6	479

ELECTRICAL PROPERTIES

Conductor Operating Temperature : 90°C

Ambient Temperature : 30°C

Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated horizontal cable tray or Reference Method 13 [free air])		In single-way ducts		Laid direct in ground	
	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.
1	2	3	4	5	6	7	8	9
mm^2	A	A	A	A	A	A	A	A
1.5	27	23	29	25	-	23	-	28
2.5	36	31	39	33	-	30	-	36
4	49	42	52	44	-	40	-	48

Voltage Drop (Per Amp Per Meter)

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c.	3 or 4 cables, 3-phase a.c.
				In ducts or in ground	In ducts or in ground
1	2	3	4	5	6
mm^2	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m
1.5	31	31	27	31	25
2.5	19	19	16	19	15
4	12	12	10	12	9.7

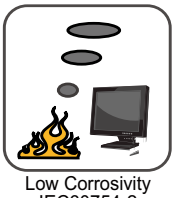
Rated Voltage

Standard


Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1


Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24/EN50266-2-4


Low Toxicity
NES 02-713/NF C 20-454

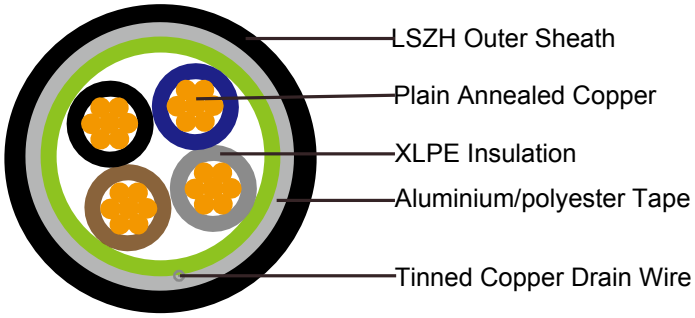

Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074


Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

Halogen Free
IEC60754-1
EN50267-2-1

300/500V XLPE Insulated, LSZH Sheathed, Screened Power Cables (2-4 Cores)

FTX200 05ROZ1-R (CU/XLPE/OSCR/LSZH 300/500V Class 2)



APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design adapted to BS 5308

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

300/500V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC 60228 class 2.
Insulation: Extruded cross-linked XLPE compound.
Filler, binder(if any): PP, Mylar tape
Overall Screen: Aluminium/polyester tape with tinned copper drain wire.
Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 6 x Overall Diameter

ELECTRICAL PROPERTIES

Dielectric test:	2000 V r.m.s. x 5' (core/core) 1000 V r.m.s. x 5' (core/screen)
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

Conductor			FTX200 05ROZ1-R				
No. Of Core X Cross Section	No./Nominal Diameter Of Strands	Nominal Overall Diameter Conductor	Nominal Insulation Thickness	Nominal Sheath Thickness	Nominal Overall Diameter	Max.Dc Resistance Of Conductor @20°C	Approx. Weight
Noxmm^2	No./mm	mm	mm	mm	mm	Ω/km	kg/km
2x1.0	7/0.44	1.32	0.6	0.9	8.1	18.1	79
2x1.5	7/0.53	1.59	0.7	0.9	9.1	12.1	102

2x2.5	7/0.67	2.01	0.8	1.0	10.5	7.41	146
2x4.0	7/0.85	2.55	0.8	1.1	11.8	4.61	205
3x1.0	7/0.44	1.32	0.6	0.9	8.6	18.1	98
3x1.5	7/0.53	1.59	0.7	0.9	9.6	12.1	129
3x2.5	7/0.67	2.01	0.8	1.0	11.1	7.41	185
3x4.0	7/0.85	2.55	0.8	1.1	12.5	4.61	262
4x1.0	7/0.44	132	0.6	1.0	9.5	18.1	123
4x1.5	7/0.53	1.59	0.7	1.0	10.6	12.1	162
4x2.5	7/0.67	2.01	0.8	1.1	12.3	7.41	233
4x4.0	7/0.85	2.55	0.8	1.2	13.9	4.61	329

ELECTRICAL PROPERTIES

Conductor Operating Temperature : 90°C

Ambient Temperature : 30°C

Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 4 (enclosed in conduit in thermally insulating wall etc)		Reference Method 3 (enclosed in conduit on a wall or in trunking etc)		Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated cable tray, horizontal or vertical)		Reference Method 12 (free air)		
									Horizontal flat spaced	Vertical flat spaced	Trefoil
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or 3 c ables three phase	2 cables, single-phase a.c. or d.c. or 3 cables three phase	3 cables, trefoil 3-phase a.c.
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.5	18	17	22	19	25	23	-	-	-	-	-
2.5	24	23	30	26	34	31	-	-	-	-	-
4	33	30	40	35	46	41	-	-	-	-	-

Voltage Drop (Per Amp Per Meter)

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.		3 or 4 cables, 3-phase a.c.		
		Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)	Ref. Methods 1 and 11 (clipped direct or on trays touching)	Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)	Ref. Methods 1, 11 and 12 (in trefoil)	Ref. Methods 1 and 11 (Flat and touching)
1	2	3	4	5	6	7
mm^2	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m
1.5	31	31	27	27	27	27
2.5	19	19	16	16	16	16
4	33	12	10	10	10	10

Rated Voltage

Standard


Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1


Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24/EN50266-2-4


Low Toxicity
NES 02-713/NF C 20-454

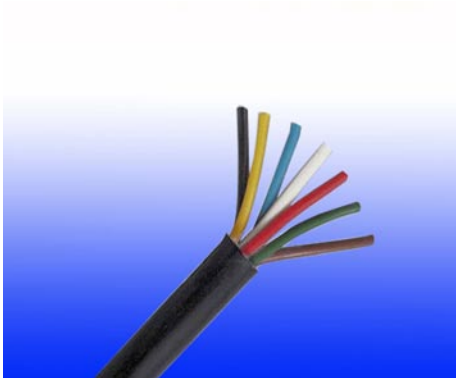

Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074

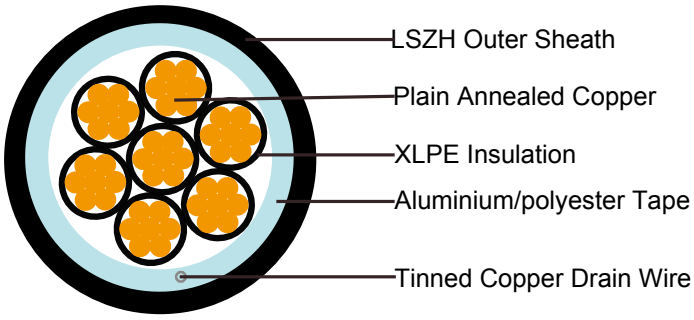

Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-07

Halogen Free
IEC60754-1
EN50267-2-1

300/500V XLPE Insulated, LSZH Sheathed, Screened Power Cables (Multicore)

FTX200 05ROZ1-R (CU/XLPE/OSCR/LSZH 300/500V Class 2)





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design adapted to BS 5308

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

300/500V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC 60228 class 2.
Insulation: Extruded cross-linked XLPE compound.
Filler, binder(if any): PP, Mylar tape
Overall Screen: Aluminium/polyester tape with tinned copper drain wire
Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 6 x Overall Diameter

ELECTRICAL PROPERTIES

Dielectric test:	2000 V r.m.s. x 5' (core/core) 1000 V r.m.s. x 5' (core/screen)
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

Conductor			FTX200 05ROZ1-R				
No. Of Core X Cross Section	No./Nominal Diameter Of Strands	Nominal Overall Diameter Conductor	Nominal Insulation Thickness	Nominal Sheath Thickness	Nominal Overall Diameter	Max.Dc Resistance Of Conductor @20°C	Approx. Weight
Noxmm^2	No./mm	mm	mm	mm	mm	Ω/km	Kg/km
7x1.0	7/0.44	1.32	0.6	1.0	11.2	18.1	186
7x1.5	7/0.53	1.59	0.7	1.1	12.9	12.1	253
7x2.5	7/0.67	2.01	0.8	1.2	14.9	7.41	365

12x1.5	7/0.53	1.59	0.7	1.2	16.8	12.1	404
12x2.5	7/0.67	2.01	0.8	1.4	19.8	7.41	595
19x1.5	7/0.53	1.59	0.7	1.3	19.7	12.1	600
19x2.5	7/0.67	2.01	0.8	1.5	23.2	7.41	885

ELECTRICAL PROPERTIES

Conductor Operating Temperature : 90°C
Ambient Temperature : 30°C
Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 4 (enclosed in conduit in thermally insulating wall etc)		Reference Method 3 (enclosed in conduit on a wall or in trunking etc)		Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated cable tray, horizontal or vertical)		Reference Method 12 (free air)		
									Horizontal flat spaced	Vertical flat spaced	Trefoil
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or 3 c ables three phase	2 cables, single-phase a.c. or d.c. or 3 cables three phase	3 cables, trefoil 3-phase a.c.
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.5	18	17	22	19	25	23	-	-	-	-	-
2.5	24	23	30	26	34	31	-	-	-	-	-

Voltage Drop (Per Amp Per Meter)

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.		3 or 4 cables, 3-phase a.c.		
		Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)	Ref. Methods 1 and 11 (clipped direct or on trays touching)	Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)	Ref. Methods 1, 11 and 12 (in trefoil)	Ref. Methods 1 and 11 (Flat and touching)
1	2	3	4	5	6	7
mm^2	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m
1.5	31	31	27	27	27	27
2.5	19	19	16	16	16	16

Rated Voltage

Standard


Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1


Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24/EN50266-2-4


Low Toxicity
NES 02-713/NF C 20-454

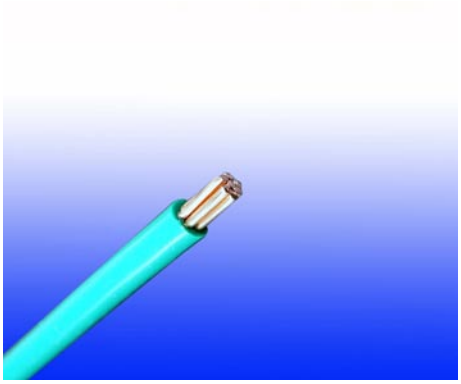

Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074

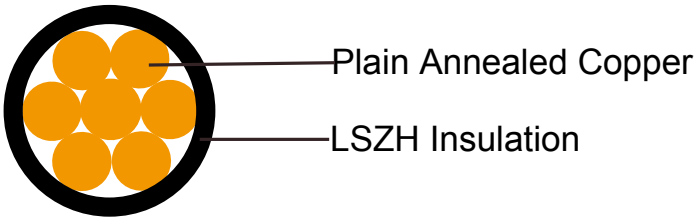

Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

Halogen Free
IEC60754-1
EN50267-2-1

450/750V LSZH Insulated, Non-sheathed Cables to BS 7211 (Single Core)

FTX100 07RZ1-R (CU/LSZH 450/750V Class 2)





APPLICATION

This cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design to BS 7211

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

450/750V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC 60228 class 2.

Insulation: LSZH compound

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 6 x Overall Diameter

ELECTRICAL PROPERTIES

Dielectric test:	2500 V r.m.s. x 5' (core/core)
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

Conductor		FTX100 07RZ1-R		
No. of Core X Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Overall Diameter	Approx. Weight
Noxmm^2	No./mm	mm	mm	kg/km
1x1.5	7/0.53	0.7	3.1	23
1x2.5	7/0.67	0.8	3.7	35
1x4	7/0.85	0.8	4.3	52
1x6	7/1.04	0.8	4.8	73
1x10	7/1.35	1.0	6.2	120
1x16	7/1.70	1.0	7.2	180
1x25	7/2.24	1.2	9.0	285
1x35	19/1.53	1.2	10.2	375
1x50	19/1.78	1.4	12.0	510
1x70	19/2.14	1.4	14.0	720
1x95	19/2.52	1.6	16.0	995
1x120	37/2.03	1.6	18.0	1230
1x150	37/2.25	1.8	20.0	1520
1x185	37/2.52	2.0	22.0	1900
1x240	61/2.25	2.2	25.0	2480

1x300	61/2.52	2.4	28.0	3100
1x400	61.2.85	2.6	31.5	3950
1x500	61/3.20	2.8	35.0	4950
1x630	127/2.52	2.8	39.0	6360

ELECTRICAL PROPERTIES
Conductor Operating Temperature : 90°C
Ambient Temperature : 30°C
Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 4 (enclosed in conduit in thermally insulating wall etc)		Reference Method 3 (enclosed in conduit on a wall or in trunking etc)		Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated cable tray, horizontal or vertical)		Reference Method 12 (free air)		
									Horizontal flat spaced	Vertical flat spaced	Trefoil
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or 3 c ables three phase	2 cables, single-phase a.c. or d.c. or 3 cables three phase	3 cables, trefoil 3-phase a.c.
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.5	18	17	22	19	25	23	-	-	-	-	-
2.5	24	23	30	26	34	31	-	-	-	-	-
4	33	30	40	35	46	41	-	-	-	-	-
6	43	39	51	45	59	54	-	-	-	-	-
10	58	53	71	63	81	74	-	-	-	-	-
16	76	70	95	85	109	99	-	-	-	-	-
25	100	91	126	111	143	130	158	140	183	163	138
35	125	111	156	138	176	161	195	176	226	203	171
50	149	135	189	168	228	209	293	215	274	246	209
70	189	170	240	214	293	268	308	279	351	318	270
95	228	205	290	259	355	326	375	341	426	389	330
120	263	235	336	299	413	379	436	398	495	453	385
150	300	270	375	328	476	436	505	461	570	524	445
185	341	306	426	370	545	500	579	530	651	600	511
240	400	358	500	433	644	590	686	630	769	711	606
300	459	410	573	493	743	681	794	730	886	824	701
400	-	-	684	584	868	793	915	849	1065	994	820
500	-	-	783	666	990	904	1044	973	1228	1150	936
630	-	-	900	764	1130	1033	1191	1115	1423	1338	1069

Voltage Drop (Per Amp Per Meter)

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.						3 or 4 cables, 3-phase a.c.								
		Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)			Ref. Methods 1 and 11 (clipped direct or on trays touching)			Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)			Ref. Methods 1, 11 and 12 (in trefoil)			Ref. Methods 1 and 11 (Flat and touching)		
1	2	3			4			5			6			7		
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
1.5	31	31			27			27			27			27		
2.5	19	19			16			16			16			16		
4	33	12			10			10			10			10		
6	7.8	7.9			6.8			6.8			6.8			6.8		
10	4.7	4.7			4.7			4			4			4		
16	2.9	2.9			2.9			2.5			2.5			2.5		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.85	1.85	0.31	1.9	1.85	0.19	1.85	1.6	0.27	1.65	1.6	0.165	1.6	1.6	0.19	1.6
35	1.35	1.35	0.29	1.35	1.35	0.18	1.35	1.15	0.25	1.15	1.15	0.155	1.5	1.15	0.18	1.15
50	0.99	1	0.29	1.05	0.99	0.18	1	0.87	0.25	0.9	0.86	0.155	0.87	0.86	0.18	0.87
70	0.68	0.7	0.28	0.75	0.68	0.175	0.71	0.6	0.24	0.65	0.59	0.15	0.61	0.59	0.175	0.62
95	0.49	0.51	0.27	0.58	0.49	0.17	0.52	0.44	0.23	0.5	0.43	0.145	0.45	0.43	0.17	0.46
120	0.39	0.41	0.26	0.48	0.39	0.165	0.43	0.35	0.23	0.42	0.34	0.14	0.37	0.34	0.165	0.38
150	0.32	0.33	0.26	0.43	0.32	0.165	0.36	0.29	0.23	0.37	0.28	0.14	0.31	0.28	0.165	0.32
185	0.25	0.27	0.26	0.37	0.26	0.165	0.3	0.23	0.23	0.32	0.22	0.14	0.26	0.22	0.165	0.28
240	0.19	0.21	0.26	0.33	0.2	0.16	0.25	0.185	0.22	0.29	0.17	0.14	0.22	0.17	0.165	0.24
300	0.155	0.175	0.25	0.31	0.16	0.16	0.22	0.15	0.22	0.27	0.14	0.14	0.195	0.135	0.16	0.21
400	0.12	0.14	0.25	0.29	0.13	0.155	0.2	0.125	0.22	0.25	0.11	0.135	0.175	0.11	0.16	0.195
500	0.093	0.12	0.25	0.28	0.105	0.155	0.185	0.1	0.22	0.24	0.09	0.135	0.16	0.088	0.16	0.18
630	0.072	0.1	0.25	0.27	0.086	0.155	0.175	0.088	0.21	0.23	0.074	0.135	0.15	0.071	0.16	0.17

Note : r = conductor resistance at operating temperature; x = reactance; z = impedance

Rated Voltage

Standard


Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1


Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24/EN50266-2-4


Low Toxicity
NES 02-713/NF C 20-454

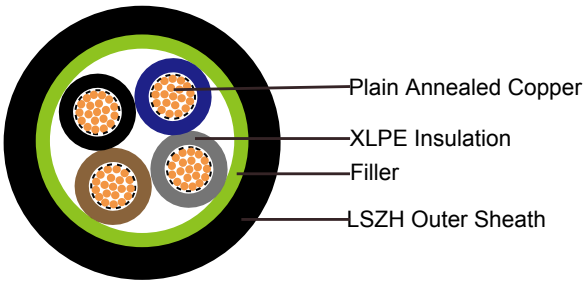

Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074


Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

Halogen Free
IEC60754-1/
EN50267-2-1

450/750V XLPE Insulated, LSZH Sheathed Power Cables (2-4 Cores)

FTX200 07RZ1-R (CU/XLPE/LSZH 450/750V Class 2)



APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design adapted to IEC 60502-1

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

450/750V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC 60228 class 2.

Insulation: Extruded cross-linked XLPE compound.
Filler, binder (if any): PP, PET
Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 6 x Overall Diameter

ELECTRICAL PROPERTIES

Dielectric test:	2500 V r.m.s. x 5' (core/core)
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETER

Conductor			FTX200 07RZ1-R				
No. of Core X Cross Section	No./Nominal Diameter of Strands	Nominal Overall Diameter Conductor	Nominal Insulation Thickness	Nominal Sheath Thickness	Nominal Overall Diameter	Max.DC resistance of conductor @20°C	Approx. Weight
Noxmm^2	No./mm	mm	mm	mm	mm	Ω/km	kg/km
2x1.0	7/0.44	1.32	0.7	1.2	8.5	18.1	101
2x1.5	7/0.53	1.59	0.7	1.2	9.1	12.1	120
2x2.5	7/0.67	2.01	0.7	1.2	10.0	7.41	154
2x4.0	7/0.85	2.55	0.7	1.3	11.1	4.61	205
3x1.0	7/0.44	1.32	0.7	1.2	9.0	18.1	118
3x1.5	7/0.53	1.59	0.7	1.2	9.6	12.1	142
3x2.5	7/0,67	2.01	0.7	1.2	10.6	7.41	185
3x4.0	7/0.85	2.55	0.7	1.3	11.8	4.61	251

4x1.0	7/0.44	1.32	0.7	1.2	9.8	18.1	141
4x1.5	7/0.53	1.59	0.7	1.2	10.5	12.1	171
4x2.5	7/0.67	2.01	0.7	1.3	11.6	7.41	226
4x4.0	7/0.85	2.55	0.7	1.3	13.0	4.61	309

ELECTRICAL PROPERTIES

Conductor Operating Temperature : 90°C
Ambient Temperature : 30°C
Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 4 (enclosed in conduit in thermally insulating wall etc)		Reference Method 3 (enclosed in conduit on a wall or in trunking etc)		Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated cable tray, horizontal or vertical)		Reference Method 12 (free air)		
									Horizontal flat spaced	Vertical flat spaced	Trefoil
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or 3 c ables three phase	2 cables, single-phase a.c. or d.c. or 3 cables three phase	3 cables, trefoil 3-phase a.c.
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.0	13	-	-	-	15	-	-	-	-	-	-
1.5	18	17	22	19	25	23	-	-	-	-	-
2.5	24	23	30	26	34	31	-	-	-	-	-
4	33	30	40	35	46	41	-	-	-	-	-

Voltage Drop (Per Amp Per Meter)

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.		3 or 4 cables, 3-phase a.c.		
		Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)	Ref. Methods 1 and 11 (clipped direct or on trays touching)	Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)	Ref. Methods 1, 11 and 12 (in trefoil)	Ref. Methods 1 and 11 (Flat and touching)
1	2	3	4	5	6	7
mm^2	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m
1.0	46	46	-	-	-	-
1.5	31	31	27	27	27	27
2.5	19	19	16	16	16	16
4	33	12	10	10	10	10

Rated Voltage

Standard


Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1


Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24
EN50266-2-4


Low Toxicity
NES 02-713/NF C 20-454

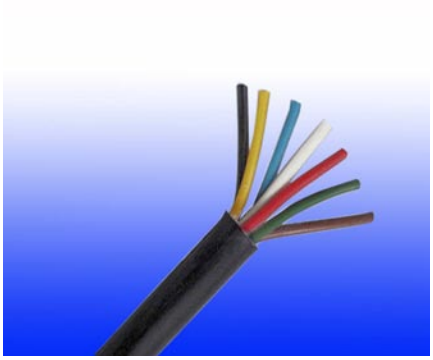

Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074

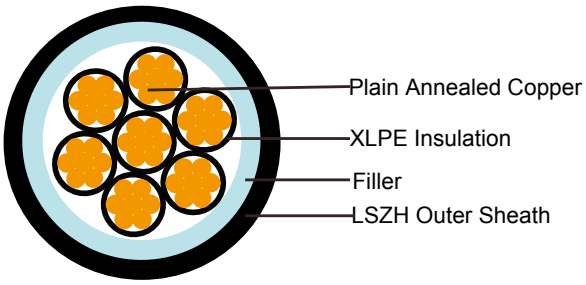

Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

Halogen Free
IEC60754-1/
EN50267-2-1

450/750V XLPE Insulated, LSZH Sheathed Power Cables (Multicore)

FTX200 07RZ1-R (CU/XLPE/LSZH 450/750V Class 2)





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design adapted to IEC 60502-1

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

450/750V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC 60228 class 2.
Insulation: Extruded cross-linked XLPE compound.
Filler, binder (if any): PP, PET

Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 6 x Overall Diameter

ELECTRICAL PROPERTIES

Dielectric test:	2500 V r.m.s. x 5' (core/core)
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

Conductor			FTX200 07RZ1-R				
No. of Core X Cross Section	No./Nominal Diameter of Strands	Nominal Overall Diameter Conductor	Nominal Insulation Thickness	Nominal Sheath Thickness	Nominal Overall Diameter	Max.DC resistance of conductor @20°C	Approx. Weight
Noxmm^2	No./mm	mm	mm	mm	mm	Ω/km	kg/km
7x1.0	7/0.44	1.32	0.7	1.3	11.6	18.1	210
7x1.5	7/0.53	1.59	0.7	1.3	12.5	12.1	258
7x2.5	7/0.67	2.01	0.7	1.3	13.8	7.41	347
12x1.5	7/0.53	1.59	0.7	1.4	16.5	12.1	413
12x2.5	7/0.67	2.01	0.7	1.5	18.3	7.41	561
19x1.5	7/0.53	1.59	0.7	1.5	19.3	12.1	609
19x2.5	7/0.67	2.01	0.7	1.6	21.6	7.41	836

ELECTRICAL PROPERTIES

Conductor Operating Temperature : 90°C
Ambient Temperature : 30°C

Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 4 (enclosed in conduit in thermally insulating wall etc)		Reference Method 3 (enclosed in conduit on a wall or in trunking etc)		Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated cable tray, horizontal or vertical)		Reference Method 12 (free air)		
									Horizontal flat spaced	Vertical flat spaced	Trefoil
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or 3 c ables three phase	2 cables, single-phase a.c. or d.c. or 3 cables three phase	3 cables, trefoil 3-phase a.c.
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.0	13	-	-	-	15	-	-	-	-	-	-
1.5	18	17	22	19	25	23	-	-	-	-	-
2.5	24	23	30	26	34	31	-	-	-	-	-

Voltage Drop (Per Amp Per Meter)

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.		3 or 4 cables, 3-phase a.c.		
		Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)	Ref. Methods 1 and 11 (clipped direct or on trays touching)	Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)	Ref. Methods 1, 11 and 12 (in trefoil)	Ref. Methods 1 and 11 (Flat and touching)
1	2	3	4	5	6	7
mm^2	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m
1.0	46	46	-	-	-	-
1.5	31	31	27	27	27	27
2.5	19	19	16	16	16	16

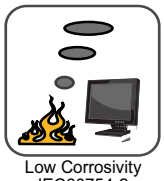
Rated Voltage

Standard


Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1


Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24
EN50266-2-4


Low Toxicity
NES 02-713/NF C 20-454

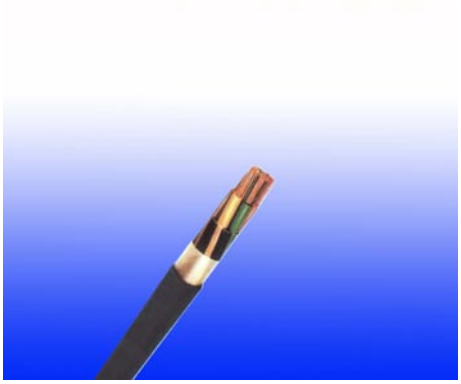

Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074

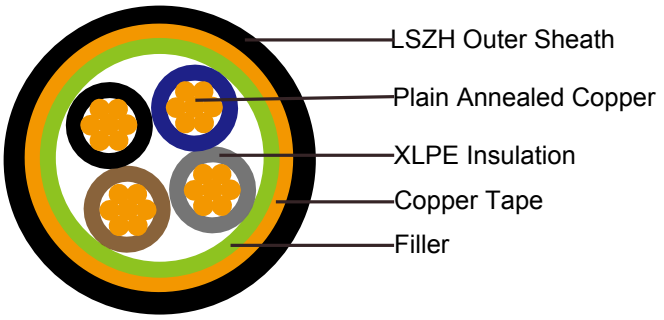

Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

Halogen Free
IEC60754-1/
EN50267-2-1

450/750V XLPE Insulated, LSZH Sheathed, Screened Power Cables (2-4 Cores)

FTX200 07RCZ1-R (CU/XLPE/CUTO/LSZH 450/750V Class 2)





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design adapted to IEC 60502-1

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

450/750V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC 60228 class 2.

Insulation: Extruded cross-linked XLPE compound.
Filler, binder (if any): PP, PET, LSZH
Overall Screen: Copper tape
Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 6 x Overall Diameter

ELECTRICAL PROPERTIES

Dielectric test:	2500 V r.m.s. x 5' (core/core)
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

Conductor			FTX200 07RCZ1-R					
No. of Core X Cross Section	No./ Nominal Diameter of Strands	Nominal Overall Diameter Conductor	Nominal Insulation Thickness	Nominal Copper Tape Thickness	Nominal Sheath Thickness	Nominal Overall Diameter	Max.DC resistance of conductor @20°C	Approx. Weight
Noxmm^2	No./mm	mm	mm	mm	mm	mm	Ω/km	kg/km
2x1.0	7/0.44	1.32	0.7	0.1	1.2	10.7	18.1	172
2x1.5	7/0.53	1.59	0.7	0.1	1.3	11.3	12.1	197
2x2.5	7/0.67	2.01	0.7	0.1	1.3	12.2	7.41	239
2x4.0	7/0.85	2.55	0.7	0.1	1.3	13.4	4.61	300
3x1.0	7/0.44	1.32	0.7	0.1	1.3	11.2	18.1	194

3x1.5	7/O.53	1.59	0.7	0.1	1.3	11.8	12.1	224
3x2.5	7/0,67	2.01	0.7	0.1	1.3	12.8	7.41	276
3x4.0	7/0.85	2.55	0.7	0.1	1.3	14.1	4.61	353
4x1.0	7/0.44	1.32	0.7	0.1	1.3	12.0	18.1	224
4x1.5	7/0.53	1.59	0.7	0.1	1.4	12.7	12.1	261
4x2.5	7/0.67	2.01	0.7	0.1	1.3	13.9	7.41	326
4x4.0	7/0.85	2.55	0.7	0.1	1.3	15.3	4.61	422

ELECTRICAL PROPERTIES

Conductor Operating Temperature : 90°C
Ambient Temperature : 30°C
Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 4 (enclosed in conduit in thermally insulating wall etc)		Reference Method 3 (enclosed in conduit on a wall or in trunking etc)		Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated cable tray, horizontal or vertical)		Reference Method 12 (free air)		
									Horizontal flat spaced	Vertical flat spaced	Trefoil
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or 3 c ables three phase	2 cables, single-phase a.c. or d.c. or 3 cables three phase	3 cables, trefoil 3-phase a.c.
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.0	13	-	-	-	15	-	-	-	-	-	-
1.5	18	17	22	19	25	23	-	-	-	-	-
2.5	24	23	30	26	34	31	-	-	-	-	-
4	33	30	40	35	46	41	-	-	-	-	-

Voltage Drop (Per Amp Per Meter)

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.		3 or 4 cables, 3-phase a.c.		
		Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)	Ref. Methods 1 and 11 (clipped direct or on trays touching)	Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)	Ref. Methods 1, 11 and 12 (in trefoil)	Ref. Methods 1 and 11 (Flat and touching)
1	2	3	4	5	6	7
mm^2	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m
1.0	46	46	-	-	-	-
1.5	31	31	27	27	27	27
2.5	19	19	16	16	16	16
4	33	12	10	10	10	10

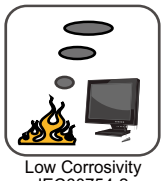
Rated Voltage

Standard

Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1

Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24
EN50266-2-4

Low Toxicity
NES 02-713/NF C 20-454



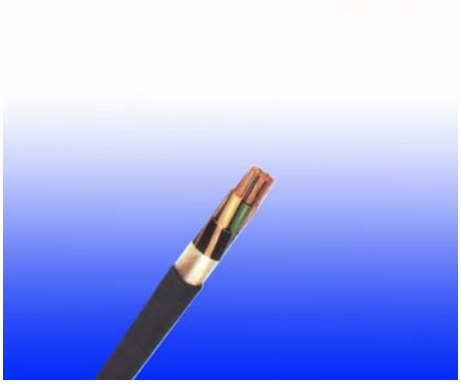
Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074

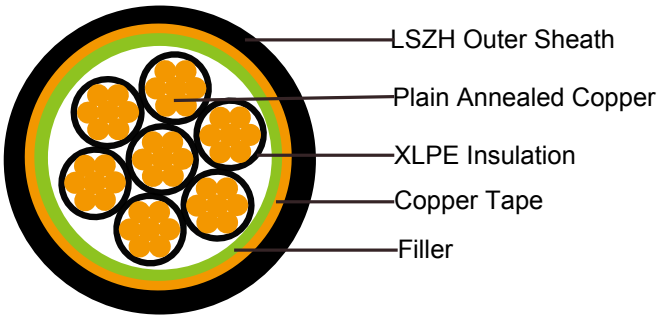
Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

Halogen Free
IEC60754-1/
EN50267-2-1

450/750V XLPE Insulated, LSZH Sheathed, Screened Power Cables (Multicore)

FTX200 07RCZ1-R (CU/XLPE/CUTO/LSZH 450/750V Class 2)





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design adapted to IEC 60502-1

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

450/750V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC 60228 class 2.

Insulation: Extruded cross-linked XLPE compound.
Filler, binder (if any): PP, PET, LSZH
Overall Screen: Copper tape
Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 6 x Overall Diameter

ELECTRICAL PROPERTIES

Dielectric test:	2500 V r.m.s. x 5' (core/core)
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

Conductor			FTX200 07RCZ1-R					
No. of Core X Cross Section	No./ Nominal Diameter of Strands	Nominal Overall Diameter Conductor	Nominal Insulation Thickness	Nominal Copper Tape Thickness	Nominal Sheath Thickness	Nominal Overall Diameter	Max.DC resistance of conductor @20°C	Approx. Weight
Noxmm^2	No./mm	mm	mm	mm	mm	mm	Ω/km	kg/km
7x1.0	7/0.44	1.32	0.7	0.1	1.3	13.9	18.1	309
7x1.5	7/0.53	1.59	0.7	0.1	1.4	14.8	12.1	366
7x2.5	7/0.44	2.01	0.7	0.1	1.4	16.2	7.41	468
12x1.5	7/0.53	1.59	0.7	0.1	1.5	18.9	12.1	560
12x2.5	7/0.67	2.01	0.7	0.1	1.5	20.8	7.41	727
19x1.5	7/0.53	1.59	0.7	0.1	1.6	21.9	12.1	786
19x2.5	7/0.67	2.01	0.7	0.1	1.6	24.2	7.41	1,037

ELECTRICAL PROPERTIES

Conductor Operating Temperature : 90°C
Ambient Temperature : 30°C
Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 4 (enclosed in conduit in thermally insulating wall etc)		Reference Method 3 (enclosed in conduit on a wall or in trunking etc)		Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated cable tray, horizontal or vertical)		Reference Method 12 (free air)		
									Horizontal flat spaced	Vertical flat spaced	Trefoil
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or 3 c ables three phase	2 cables, single-phase a.c. or d.c. or 3 cables three phase	3 cables, trefoil 3-phase a.c.
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.0	13	-	-	-	15	-	-	-	-	-	-
1.5	18	17	22	19	25	23	-	-	-	-	-
2.5	24	23	30	26	34	31	-	-	-	-	-
4	33	30	40	35	46	41	-	-	-	-	-

Voltage Drop (Per Amp Per Meter)

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.		3 or 4 cables, 3-phase a.c.		
		Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)	Ref. Methods 1 and 11 (clipped direct or on trays touching)	Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)	Ref. Methods 1, 11 and 12 (in trefoil)	Ref. Methods 1 and 11 (Flat and touching)
1	2	3	4	5	6	7
mm^2	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m
1.0	46	46	-	-	-	-
1.5	31	31	27	27	27	27
2.5	19	19	16	16	16	16
4	33	12	10	10	10	10

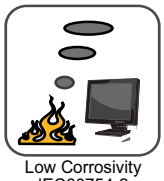
Rated Voltage

Standard

Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1

Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24
EN50266-2-4

Low Toxicity
NES 02-713/NF C 20-454



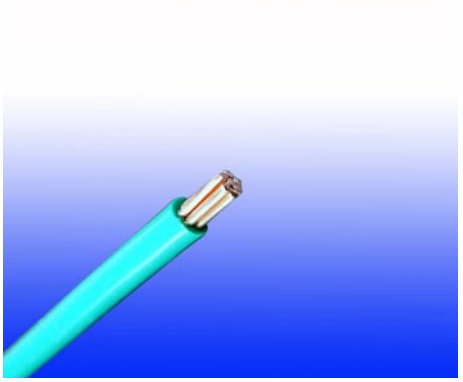
Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074

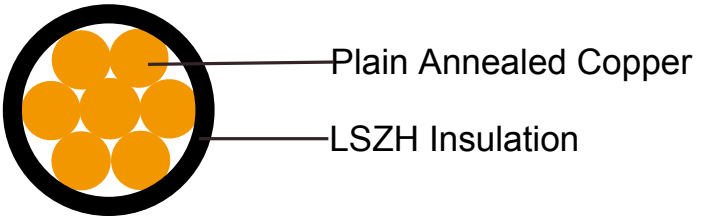
Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

Halogen Free
IEC60754-1/
EN50267-2-1

600/1000V LSZH Insulated, Non-sheathed Cables to BS7211 (Single Core)

FTX100 1Z1-R (CU/LSZH 600/1000V Class 2)





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design adapted to BS 7211

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC 60228 class 2.
Insulation: Extruded cross-linked LSZH compound.

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 6 x Overall Diameter

ELECTRICAL PROPERTIES

Dielectric test:	3500 V r.m.s. x 5' (core/core);
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

Conductor		FTX100 1Z1-R		
No. of Core X Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Insulated, Non-Sheathed	
			Nominal Overall Diameter	Approx. Weight
Noxmm^2	No./mm	mm	mm	kg/km
1x1.5	7/0.53	0.7	3.1	22
1x2.5	7/0.67	0.8	3.7	34
1x4	7/0.85	0.8	4.3	50
1x6	7/1.04	0.8	4.8	70
1x10	7/1.35	1.0	6.2	116
1x16	7/1.70	1.0	7.2	174
1x25	7/2.14	1.2	9.0	276
1x35	7/2.52	1.2	10.0	366

1x50	19/1.78	1.4	11.9	502
1x70	19/2.14	1.4	13.7	706
1x95	19/2.52	1.6	16.0	974
1x120	37/2.03	1.6	17.6	1213
1x150	37/2.25	1.8	19.6	1492
1x185	37/2.52	2.0	21.8	1868
1x240	61/2.25	2.2	24.4	2443
1x300	61/2.52	2.4	27.7	3055
1x400	61/2.85	2.6	31.1	3888
1x500	61/3.20	2.8	34.6	4880
1x630	127/2.52	2.8	38.6	6229

ELECTRICAL PROPERTIES

Conductor Operating Temperature : 90°C
Ambient Temperature : 30°C
Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 4 (enclosed in conduit in thermally insulating wall etc)		Reference Method 3 (enclosed in conduit on a wall or in trunking etc)		Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated cable tray, horizontal or vertical)		Reference Method 12 (free air)		
									Horizontal flat spaced	Vertical flat spaced	Trefoil
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or 3 c ables three phase	2 cables, single-phase a.c. or d.c. or 3 cables three phase	3 cables, trefoil 3-phase a.c.
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.5	18	17	22	19	25	23	-	-	-	-	-
2.5	24	23	30	26	34	31	-	-	-	-	-
4	33	30	40	35	46	41	-	-	-	-	-
6	43	39	51	45	59	54	-	-	-	-	-
10	58	53	71	63	81	74	-	-	-	-	-

16	76	70	95	85	109	99	-	-	-	-	-
25	100	91	126	111	143	130	158	140	183	163	138
35	125	111	156	138	176	161	195	176	226	203	171
50	149	135	189	168	228	209	293	215	274	246	209
70	189	170	240	214	293	268	308	279	351	318	270
95	228	205	290	259	355	326	375	341	426	389	330
120	263	235	336	299	413	379	436	398	495	453	385
150	300	270	375	328	476	436	505	461	570	524	445
185	341	306	426	370	545	500	579	530	651	600	511
240	400	358	500	433	644	590	686	630	769	711	606
300	459	410	573	493	743	681	794	730	886	824	701
400	-	-	684	584	868	793	915	849	1065	994	820
500	-	-	783	666	990	904	1044	973	1228	1150	936
630	-	-	900	764	1130	1033	1191	1115	1423	1338	1069

Voltage Drop (Per Amp Per Meter)

Size of conductor	2 cables d.c.	2 cables, single-phase a.c.						3 or 4 cables, 3-phase a.c.								
		Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)			Ref. Methods 1 and 11 (clipped direct or on trays touching)			Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)			Ref. Methods 1, 11 and 12 (in trefoil)			Ref. Methods 1 and 11 (Flat and touching)		
1	2	3			4			5			6			7		
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
1.5	31	31			27			27			27			27		
2.5	19	19			16			16			16			16		
4	33	12			10			10			10			10		
6	7.8	7.9			6.8			6.8			6.8			6.8		
10	4.7	4.7			4.7			4			4			4		
16	2.9	2.9			2.9			2.5			2.5			2.5		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.85	1.85	0.31	1.90	1.85	0.190	1.85	1.60	0.27	1.65	1.600	0.165	1.600	1.600	0.190	1.600
35	1.35	1.35	0.29	1.35	1.35	0.180	1.35	1.15	0.25	1.15	1.150	0.155	1.50	1.150	0.180	1.150

50	0.99	1.00	0.29	1.05	0.99	0.180	1.00	0.87	0.25	0.90	0.860	0.155	0.870	0.860	0.180	0.870
70	0.68	0.70	0.28	0.75	0.68	0.175	0.71	0.60	0.24	0.65	0.590	0.150	0.610	0.590	0.175	0.620
95	0.49	0.51	0.27	0.58	0.49	0.170	0.52	0.44	0.23	0.50	0.430	0.145	0.450	0.430	0.170	0.460
120	0.39	0.41	0.26	0.48	0.39	0.165	0.43	0.35	0.23	0.42	0.340	0.140	0.370	0.340	0.165	0.380
150	0.32	0.33	0.26	0.43	0.32	0.165	0.36	0.29	0.23	0.37	0.280	0.140	0.310	0.280	0.165	0.320
185	0.25	0.27	0.26	0.37	0.26	0.165	0.30	0.23	0.23	0.32	0.220	0.140	0.260	0.220	0.165	0.280
240	0.19	0.21	0.26	0.33	0.20	0.160	0.25	0.185	0.22	0.29	0.170	0.140	0.220	0.170	0.165	0.240
300	0.155	0.175	0.25	0.31	0.16	0.160	0.22	0.150	0.22	0.27	0.140	0.140	0.195	0.135	0.160	0.210
400	0.12	0.140	0.25	0.29	0.13	0.155	0.20	0.125	0.22	0.25	0.110	0.135	0.175	0.110	0.160	0.195
500	0.093	0.120	0.25	0.28	0.105	0.155	0.185	0.100	0.22	0.24	0.090	0.135	0.160	0.088	0.160	0.180
630	0.072	0.100	0.25	0.27	0.086	0.155	0.175	0.088	0.21	0.23	0.074	0.135	0.150	0.071	0.160	0.170

Note :
r = conductor resistance at operating temperature
x = reactance
z = impedance

Rated Voltage

Standard


Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1


Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24
EN50266-2-4


Low Toxicity
NES 02-713/NF C 20-454

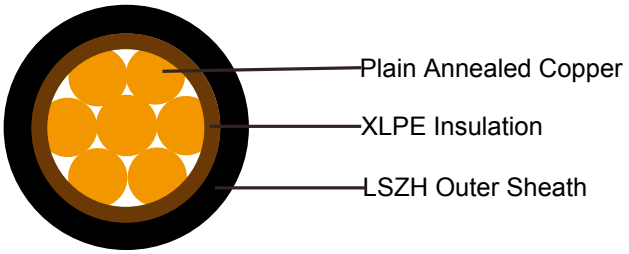

Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074


Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

Halogen Free
IEC60754-1
EN50267-2-1

600/1000V XLPE Insulated, LSZH Sheathed, Unarmoured Cables to IEC 60502-1 (Single Core)

FTX300 1RZ1-R (CU/XLPE/LSZH 600/1000V Class 2)



APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design adapted to IEC 60502-1

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC 60228 class 2.
Insulation: Extruded cross-linked XLPE compound.
Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 6 x Overall Diameter

ELECTRICAL PROPERTIES

Dielectric test:	3500 V r.m.s. x 5' (core/core)
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

Conductor		FTX300 1RZ1-R		
No. of Core X Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Overall Diameter	Approx. Weight
mm^2	No./mm	mm	mm	kg/km
1x1.5	7/0.53	0.7	6	48
1x2.5	7/0.67	0.7	6.4	63
1x4	7/0.85	0.7	7.0	78
1x6	7/1.04	0.7	7.5	105
1x10	7/1.35	0.7	8.5	151
1x16	7/1.70	0.7	9.5	211
1x25	7/2.14	0.9	11.2	315
1x35	7/2.52	0.9	12.4	416

Conductor		FTX300 1RZ1-R		
No. of Core X Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Overall Diameter	Approx. Weight
mm^2	No./mm	mm	mm	kg/km
1x50	19/1.78	1.0	14	569
1x70	19/2.14	1.1	16	792
1x95	19/2.52	1.1	18	1068
1x120	37/2.03	1.2	20	1325
1x150	37/2.25	1.4	22	1627
1x185	37/2.52	1.6	24.4	2021
1x240	61/2.25	1.7	27.5	2617
1x300	61/2.52	1.8	30.3	3252
1x400	61/2.85	2.0	33.9	4131
1x500	61/3.20	2.2	37.6	5175
1x630	127/2.52	2.4	42.4	6631
1x800	127/2.85	2.6	47.3	8412
1x1000	127/3.20	2.8	52.4	10530

ELECTRICAL PROPERTIES

Conductor Operating Temperature : 90°C
Ambient Temperature : 30°C

FTX300 1RZ1-R
Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 4 (enclosed in conduit in thermally insulating wall etc)		Reference Method 3 (enclosed in conduit on a wall or in trunking etc)		Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated cable tray, horizontal or vertical)		Reference Method 12 (free air)		
									Horizontal flat spaced	Vertical flat spaced	Trefoil
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or 3 c ables three phase	2 cables, single-phase a.c. or d.c. or 3 cables three phase	3 cables, trefoil 3-phase a.c.

1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.5	18	17	22	19	25	23	-	-	-	-	-
2.5	24	23	30	26	34	31	-	-	-	-	-
4	33	30	40	35	46	41	-	-	-	-	-
6	43	39	51	45	59	54	-	-	-	-	-
10	58	53	71	63	81	74	-	-	-	-	-
16	76	70	95	85	109	99	-	-	-	-	-
25	100	91	126	111	143	130	158	140	183	163	138
35	125	111	156	138	176	161	195	176	226	203	171
50	149	135	189	168	228	209	293	215	274	246	209
70	189	170	240	214	293	268	308	279	351	318	270
95	228	205	290	259	355	326	375	341	426	389	330
120	263	235	336	299	413	379	436	398	495	453	385
150	300	270	375	328	476	436	505	461	570	524	445
185	341	306	426	370	545	500	579	530	651	600	511
240	400	358	500	433	644	590	686	630	769	711	606
300	459	410	573	493	743	681	794	730	886	824	701
400	-	-	684	584	868	793	915	849	1065	994	820
500	-	-	783	666	990	904	1044	973	1228	1150	936
630	-	-	900	764	1130	1033	1191	1115	1423	1338	1069
800	-	-	-	-	1288	1179	1358	1275	1580	1485	1214
1000	-	-	-	-	1443	1323	1520	1436	1775	1671	1349

Voltage Drop (Per Amp Per Meter)

Size of conductor	2 cables d.c.	2 cables, single-phase a.c.						3 or 4 cables, 3-phase a.c.								
		Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)			Ref. Methods 1 and 11 (clipped direct or on trays touching)			Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)			Ref. Methods 1, 11 and 12 (in trefoil)			Ref. Methods 1 and 11 (Flat and touching)		
1	2	3			4			5			6			7		
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
1.5	31	31			27			27			27			27		
2.5	19	19			16			16			16			16		
4	33	12			10			10			10			10		
6	7.8	7.9			6.8			6.8			6.8			6.8		
10	4.7	4.7			4.7			4			4			4		
16	2.9	2.9			2.9			2.5			2.5			2.5		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z

25	1.85	1.85	0.31	1.90	1.85	0.190	1.85	1.60	0.27	1.65	1.600	0.165	1.600	1.600	0.190	1.600
35	1.35	1.35	0.29	1.35	1.35	0.180	1.35	1.15	0.25	1.15	1.150	0.155	1.50	1.150	0.180	1.150
50	0.99	1.00	0.29	1.05	0.99	0.180	1.00	0.87	0.25	0.90	0.860	0.155	0.870	0.860	0.180	0.870
70	0.68	0.70	0.28	0.75	0.68	0.175	0.71	0.60	0.24	0.65	0.590	0.150	0.610	0.590	0.175	0.620
95	0.49	0.51	0.27	0.58	0.49	0.170	0.52	0.44	0.23	0.50	0.430	0.145	0.450	0.430	0.170	0.460
120	0.39	0.41	0.26	0.48	0.39	0.165	0.43	0.35	0.23	0.42	0.340	0.140	0.370	0.340	0.165	0.380
150	0.32	0.33	0.26	0.43	0.32	0.165	0.36	0.29	0.23	0.37	0.280	0.140	0.310	0.280	0.165	0.320
185	0.25	0.27	0.26	0.37	0.26	0.165	0.30	0.23	0.23	0.32	0.220	0.140	0.260	0.220	0.165	0.280
240	0.19	0.21	0.26	0.33	0.20	0.160	0.25	0.185	0.22	0.29	0.170	0.140	0.220	0.170	0.165	0.240
300	0.155	0.175	0.25	0.31	0.16	0.160	0.22	0.150	0.22	0.27	0.140	0.140	0.195	0.135	0.160	0.210
400	0.12	0.140	0.25	0.29	0.13	0.155	0.20	0.125	0.22	0.25	0.110	0.135	0.175	0.110	0.160	0.195
500	0.093	0.120	0.25	0.28	0.105	0.155	0.185	0.100	0.22	0.24	0.090	0.135	0.160	0.088	0.160	0.180
630	0.072	0.100	0.25	0.27	0.086	0.155	0.175	0.088	0.21	0.23	0.074	0.135	0.150	0.071	0.160	0.170
800	0.056	-	-	-	0.072	0.150	0.170	-	-	-	0.062	0.130	0.145	0.059	0.155	0.165
1000	0.045	-	-	-	0.063	0.150	0.165	-	-	-	0.055	0.130	0.140	0.050	0.155	0.165

Rated Voltage

Standard

Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1

Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24/EN50266-2-4

Low Toxicity
NES 02-713/NF C 20-454

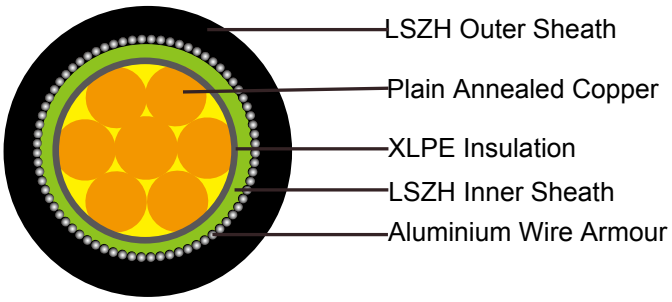
Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074

Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

Halogen Free
IEC60754-1
EN50267-2-1

600/1000V XLPE Insulated, LSZH Sheathed, Armoured Cables to IEC 60502-1 (Single Core)

FTX300 1RZ1MZ1-R (CU/XLPE/LSZH/AWA/LSZH 600/1000V Class 2)



APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design adapted to IEC 60502-1

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC 60228 class 2.

Insulation: Extruded cross-linked XLPE compound.
Inner sheath: LSZH Compound
Armouring: Aluminium Wire
Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 10 x Overall Diameter

ELECTRICAL PROPERTIES

Dielectric test:	3500 V r.m.s. x 5' (core/core)
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

Conductor		FTX300 1RZ1MZ1-R			
No. of Core X Cross Section	No./Nominal Diameter of Strands	Diameter Under Armour	Armour Wire Diameter	Nominal Overall Diameter	Approx. Weight
mm^2	No./mm	mm	mm	mm	kg/km
1x70	19/2.14	15.4	1.25	21.5	960
1x95	19/2.52	17.3	1.25	23.4	1240
1x120	37/2.03	19.1	1.6	25.9	1650
1x150	37/2.25	21.1	1.6	27.9	1970
1x185	37/2.52	23.2	1.6	30.1	2390
1x240	61/2.25	26.2	1.6	33.2	3040

1x300	61/2.52	28.8	1.6	35.8	3790
1x400	61/2.85	32.7	2.0	40.9	4790
1x500	61/3.20	36.2	2.0	44.6	5880
1x630	127/2.52	40.6	2.0	49.2	7400
1x800	127/2.85	45.7	2.5	55.7	9500
1x1000	127/3.20	50.6	2.5	61.0	11750

ELECTRICAL PROPERTIES

Conductor Operating Temperature : 90°C

Ambient Temperature : 30°C

Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated horizontal cable tray or Reference Method 13 [free air])		Reference Method 12 (free air)	In single-way ducts		Laid direct in ground	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	3 cables 3-phase a.c. trefoil touching	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.
1	2	3	4	5	6	7	8	9	10
mm^2	A	A	A	A	A	A	A	A	A
70	303	277	322	293	285	310	280	340	290
95	367	333	389	352	346	365	330	405	345
120	425	383	449	405	402	410	370	460	389
150	488	437	516	462	463	445	405	510	435
185	557	496	587	524	529	485	440	580	490
240	656	579	689	612	625	550	500	670	560
300	755	662	792	700	720	610	550	750	630
400	853	717	899	767	815	640	580	830	700
500	962	791	1016	851	918	690	620	910	770
630	1082	861	1146	935	1027	750	670	1000	840
800	1170	904	1246	987	1119	828	735	1117	931
1000	1261	961	1345	1055	1214	919	811	1254	1038

Voltage Drop (Per Amp Per Meter)

Conductor cross-sectional area	2 cables d.c.	2 cables single-phase a.c.			3 or 4 cables three-phase a.c.						2 cables singlephase a.c.		3 or 4 cables, 3-phase a.c. touching	
		Reference Method 1 & 11 (touching)			Reference Method 1, 11 & 12 (in trefoil touching)			Reference Method 1 & 11 (Flat touching)			In ducts	In ground	In ducts	In ground
1	2	3			4			5			6	7	8	9
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m	mV/A/m	mV/A/m	mV/A/m
		r	x	z	r	x	z	r	x	z				
70	0.67	0.68	0.20	0.71	0.59	0.17	0.62	0.6	0.25	0.65	0.80	0.70	0.70	0.61
95	0.49	0.51	0.195	0.55	0.44	0.17	0.47	0.46	0.24	0.52	0.65	0.53	0.56	0.46
120	0.39	0.41	0.190	0.45	0.35	0.165	0.39	0.38	0.24	0.44	0.55	0.43	0.48	0.37
150	0.31	0.33	0.185	0.38	0.29	0.160	0.33	0.31	0.23	0.39	0.50	0.37	0.43	0.32
185	0.25	0.27	0.185	0.33	0.23	0.160	0.28	0.26	0.23	0.34	0.45	0.31	0.39	0.27
240	0.195	0.21	0.180	0.28	0.18	0.155	0.24	0.21	0.22	0.30	0.40	0.26	0.35	0.23
300	0.155	0.17	0.175	0.25	0.145	0.150	0.21	0.17	0.22	0.28	0.37	0.24	0.32	0.21
400	0.115	0.145	0.170	0.22	0.125	0.150	0.195	0.160	0.21	0.27	0.35	0.21	0.30	0.19
500	0.093	0.125	0.170	0.21	0.105	0.145	0.180	0.145	0.20	0.25	0.33	0.20	0.28	0.18
630	0.073	0.105	0.165	0.195	0.092	0.145	0.170	0.135	0.195	0.24	0.30	0.19	0.26	0.17
800	0.056	0.090	0.160	0.190	0.086	0.140	0.165	0.130	0.180	0.23	0.28	0.18	0.24	0.16
1000	0.045	0.092	0.155	0.180	0.080	0.135	0.155	0.125	0.170	0.21	0.26	0.17	0.22	0.15

Note :
r = conductor resistance at operating temperature
x = reactance
z = impedance

Rated Voltage

Standard


Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1


Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24/EN50266-2-4


Low Toxicity
NES 02-713/NF C 20-454

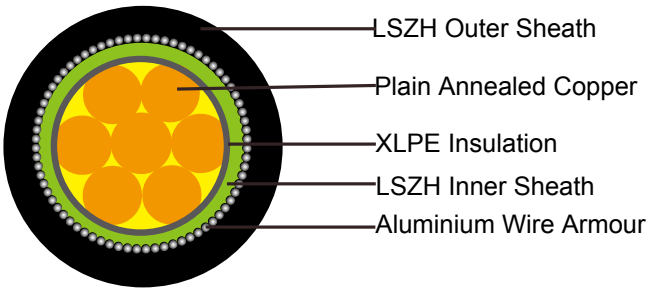

Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074


Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

Halogen Free
IEC60754-1
EN50267-2-1

600/1000V XLPE Insulated, LSZH Sheathed, Armoured Cables to BS 6724 (Single Core)

FTX300 1RZ1MZ1-R (CU/XLPE/LSZH/AWA/LSZH 600/1000V Class 2)



APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design adapted to BS 6724

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC 60228 class 2.

Insulation: Extruded cross-linked XLPE compound.
Inner sheath: LSZH Compound
Armouring: Aluminium Wire
Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 10 x Overall Diameter

ELECTRICAL PROPERTIES

Dielectric test:	3500 V r.m.s. x 5' (core/core)
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

Conductor		FTX300 1RZ1MZ1-R					
No. of Core X Cross Section	No./ Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Bedding Thickness	Nominal Alum Wire Armor Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Aprrox Weight
No./mm²	No./mm	mm	mm	mm	mm	mm	kg/km
1x50	19/1.78	1.0	0.8	0.9	1.5	17.5	800
1x70	19/2.14	1.1	0.8	1.25	1.5	20.2	990
1x95	19/2.52	1.1	0.8	1.25	1.6	22.3	1280
1x120	37/2.03	1.2	0.8	1.25	1.6	24.2	1550
1x150	37/2.25	1.4	1	1.6	1.7	27.4	1900
1x185	37/2.52	1.6	1	1.6	1.8	30.0	2320

1x240	61/2.25	1.7	1	1.6	1.8	32.8	2930
1x300	61/2.52	1.8	1	1.6	1.9	35.6	3580
1x400	61/2.85	2.0	1.2	2.0	2.0	40.5	4600
1x500	61/3.20	2.2	1.2	2.0	2.1	44.2	5680
1x630	127/2.52	2.4	1.2	2.0	2.2	48.8	7160
1x800	127/2.85	2.6	1.4	2.5	2.4	55.4	9315
1x1000	127/3.20	2.8	1.4	2.5	2.5	60.6	11490

ELECTRICAL PROPERTIES

Conductor Operating Temperature : 90°C
Ambient Temperature : 30°C
Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated horizontal cable tray or Reference Method 13 [free air])		Reference Method 12 (free air)	In single-way ducts		Laid direct in ground	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	3 cables 3-phase a.c. trefoil touching	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.
1	2	3	4	5	6	7	8	9	10
mm^2	A	A	A	A	A	A	A	A	A
50	237	220	253	232	222	255	235	275	235
70	303	277	322	293	285	310	280	340	290
95	367	333	389	352	346	365	330	405	345
120	425	383	449	405	402	410	370	460	389
150	488	437	516	462	463	445	405	510	435
185	557	496	587	524	529	485	440	580	490
240	656	579	689	612	625	550	500	670	560
300	755	662	792	700	720	610	550	750	630
400	853	717	899	767	815	640	580	830	700
500	962	791	1016	851	918	690	620	910	770
630	1082	861	1146	935	1027	750	670	1000	840
800	1170	904	1246	987	1119	828	735	1117	931
1000	1261	961	1345	1055	1214	919	811	1254	1038

Voltage Drop (Per Amp Per Meter)

Conductor cross-sectional area	2 cables d.c.	2 cables single-phase a.c.			3 or 4 cables three-phase a.c.						2 cables singlephase a.c.		3 or 4 cables, 3-phase a.c. touching	
		Reference Method 1 & 11 (touching)			Reference Method 1, 11 & 12 (in trefoil touching)			Reference Method 1 & 11 (Flat touching)			In ducts	In ground	In ducts	In ground
1	2	3			4			5			6	7	8	9
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m	mV/A/m	mV/A/m	mV/A/m
		r	x	z	r	x	z	r	x	z				
50	0.98	0.99	0.21	1	0.86	0.18	0.87	0.84	0.25	0.88	1.10	0.99	0.93	0.86
70	0.67	0.68	0.20	0.71	0.59	0.17	0.62	0.6	0.25	0.65	0.80	0.70	0.70	0.61
95	0.49	0.51	0.195	0.55	0.44	0.17	0.47	0.46	0.24	0.52	0.65	0.53	0.56	0.46
120	0.39	0.41	0.190	0.45	0.35	0.165	0.39	0.38	0.24	0.44	0.55	0.43	0.48	0.37
150	0.31	0.33	0.185	0.38	0.29	0.160	0.33	0.31	0.23	0.39	0.50	0.37	0.43	0.32
185	0.25	0.27	0.185	0.33	0.23	0.160	0.28	0.26	0.23	0.34	0.45	0.31	0.39	0.27
240	0.195	0.21	0.180	0.28	0.18	0.155	0.24	0.21	0.22	0.30	0.40	0.26	0.35	0.23
300	0.155	0.17	0.175	0.25	0.145	0.150	0.21	0.17	0.22	0.28	0.37	0.24	0.32	0.21
400	0.115	0.145	0.170	0.22	0.125	0.150	0.195	0.160	0.21	0.27	0.35	0.21	0.30	0.19
500	0.093	0.125	0.170	0.21	0.105	0.145	0.180	0.145	0.20	0.25	0.33	0.20	0.28	0.18
630	0.073	0.105	0.165	0.195	0.092	0.145	0.170	0.135	0.195	0.24	0.30	0.19	0.26	0.17
800	0.056	0.090	0.160	0.190	0.086	0.140	0.165	0.130	0.180	0.23	0.28	0.18	0.24	0.16
1000	0.045	0.092	0.155	0.180	0.080	0.135	0.155	0.125	0.170	0.21	0.26	0.17	0.22	0.15

Note :
r = conductor resistance at operating temperature
x = reactance
z = impedance

Rated Voltage

Standard


Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1


Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24/EN50266-2-4


Low Toxicity
NES 02-713/NF C 20-454

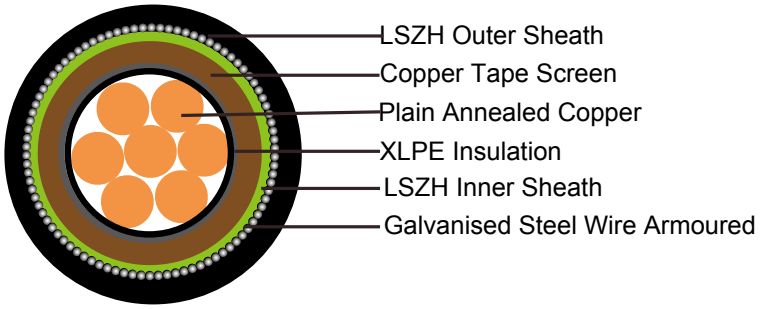

Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074


Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

Halogen Free
IEC60754-1
EN50267-2-1

600/1000V XLPE Insulated, LSZH Sheathed, CUTO Screened, Armoured Cables to IEC 60502-1 (Single Core)

FTX300 1RCZ1MZ1-R (CU/XLPE/CUTO/LSZH/AWA/LSZH 600/1000V Class 2)



APPLICATION

This range of screened cables drastically reduce interferences from electrical noise, especially in Variable Speed Drive (VSD) applications and are manufactured with fixed conductors.

STANDARDS

Basic design adapted to IEC 60502-1

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC 60228 class 2.

Insulation: Extruded cross-linked XLPE compound.
Overall Screen: Copper Tape
Inner sheath: LSZH Compound
Armouring: Aluminium Wire
Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 12 x Overall Diameter

ELECTRICAL PROPERTIES

Dielectric test:	3500 V r.m.s. x 5' (core/core)
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

Conductor		FTX300 1RCZ1MZ1-R						
No. of Core X Cross Section	No./ Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Sheath Thickness	Diameter Under Screen	Diameter Over Inner Sheath	Armour Wire Diameter	Nominal Overall Diameter	Approx. Weight
mm^2	No./mm	mm	mm	mm	mm	mm	mm	kg/km
1x70	19/2.14	1.1	1.8	15.2	17.6	20.1	23.9	1400
1x95	19/2.52	1.1	1.8	17.1	19.5	22.0	25.8	1700
1x120	37/2.03	1.2	1.8	19.0	20.8	24.0	27.8	2000
1x150	37/2.25	1.4	1.8	21.0	22.8	26.0	29.8	2400
1x185	37/2.52	1.6	1.8	23.2	25.0	28.2	32.0	2800

1x240	61/2.25	1.7	1.9	26.1	27.9	31.1	35.1	3500
1x300	61/2.52	1.8	2.0	28.7	30.5	33.7	37.9	4200
1x400	61/2.85	2.0	2.1	32.5	34.3	38.3	42.7	5400
1x500	61/3.20	2.2	2.2	36.0	37.8	41.8	46.4	6500
1x630	127/2.52	2.4	2.3	40.4	42.2	46.2	51.0	8200
1x800	127/2.85	2.6	2.5	45.5	47.3	52.3	57.5	10400
1x1000	127/3.20	2.8	2.7	50.4	52.2	57.2	62.4	13000

ELECTRICAL PROPERTIES

Conductor Operating Temperature : 90°C
Ambient Temperature : 30°C
Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated horizontal cable tray or Reference Method 13 [free air])		Reference Method 12 (free air)	In single-way ducts		Laid direct in ground	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	3 cables 3-phase a.c. trefoil touching	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.
1	2	3	4	5	6	7	8	9	10
mm^2	A	A	A	A	A	A	A	A	A
70	303	277	322	293	285	310	280	340	290
95	367	333	389	352	346	365	330	405	345
120	425	383	449	405	402	410	370	460	389
150	488	437	516	462	463	445	405	510	435
185	557	496	587	524	529	485	440	580	490
240	656	579	689	612	625	550	500	670	560
300	755	662	792	700	720	610	550	750	630
400	853	717	899	767	815	640	580	830	700
500	962	791	1016	851	918	690	620	910	770
630	1082	861	1146	935	1027	750	670	1000	840
800	1170	904	1246	987	1119	828	735	1117	931
1000	1261	961	1345	1055	1214	919	811	1254	1038

Voltage Drop (Per Amp Per Meter)

Conductor cross-sectional area	2 cables d.c.	2 cables single-phase a.c.			3 or 4 cables three-phase a.c.						2 cables singlephase a.c.		3 or 4 cables, 3-phase a.c. touching	
		Reference Method 1 & 11 (touching)			Reference Method 1, 11 & 12 (in trefoil touching)			Reference Method 1 & 11 (Flat touching)			In ducts	In ground	In ducts	In ground
1	2	3			4			5			6	7	8	9
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m	mV/A/m	mV/A/m	mV/A/m
		r	x	z	r	x	z	r	x	z				
70	0.67	0.68	0.20	0.71	0.59	0.17	0.62	0.6	0.25	0.65	0.80	0.70	0.70	0.61
95	0.49	0.51	0.195	0.55	0.44	0.17	0.47	0.46	0.24	0.52	0.65	0.53	0.56	0.46
120	0.39	0.41	0.190	0.45	0.35	0.165	0.39	0.38	0.24	0.44	0.55	0.43	0.48	0.37
150	0.31	0.33	0.185	0.38	0.29	0.160	0.33	0.31	0.23	0.39	0.50	0.37	0.43	0.32
185	0.25	0.27	0.185	0.33	0.23	0.160	0.28	0.26	0.23	0.34	0.45	0.31	0.39	0.27
240	0.195	0.21	0.180	0.28	0.18	0.155	0.24	0.21	0.22	0.30	0.40	0.26	0.35	0.23
300	0.155	0.17	0.175	0.25	0.145	0.150	0.21	0.17	0.22	0.28	0.37	0.24	0.32	0.21
400	0.115	0.145	0.170	0.22	0.125	0.150	0.195	0.160	0.21	0.27	0.35	0.21	0.30	0.19
500	0.093	0.125	0.170	0.21	0.105	0.145	0.180	0.145	0.20	0.25	0.33	0.20	0.28	0.18
630	0.073	0.105	0.165	0.195	0.092	0.145	0.170	0.135	0.195	0.24	0.30	0.19	0.26	0.17
800	0.056	0.090	0.160	0.190	0.086	0.140	0.165	0.130	0.180	0.23	0.28	0.18	0.24	0.16
1000	0.045	0.092	0.155	0.180	0.080	0.135	0.155	0.125	0.170	0.21	0.26	0.17	0.22	0.15

Note :
r = conductor resistance at operating temperature
x = reactance
z = impedance

Rated Voltage

Standard


Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1


Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24
EN50266-2-4


Low Toxicity
NES 02-713/NF C 20-454

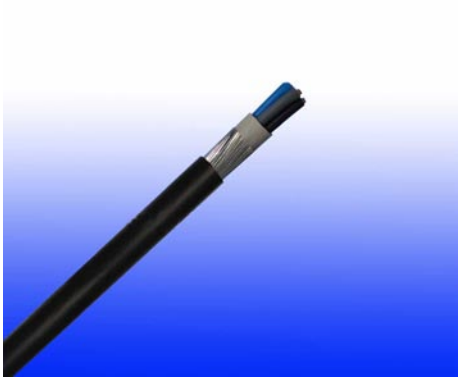

Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074

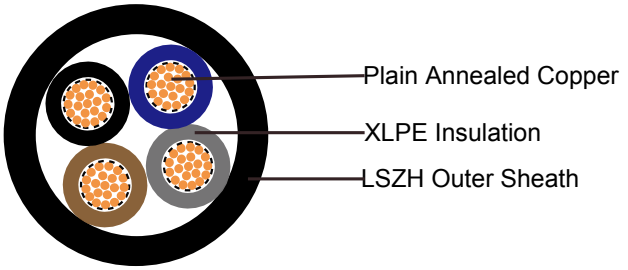

Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

Halogen Free
IEC60754-1
EN50267-2-1

600/1000V XLPE Insulated, LSZH Sheathed, Unarmoured Cables to IEC 60502-1 (2-5 Cores & Multicore)

FTX400 1RZ1-R (CU/XLPE/LSZH 600/1000V Class 2)





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design adapted to IEC 60502-1

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC 60228 class 2.
Insulation: Extruded cross-linked XLPE compound.
Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

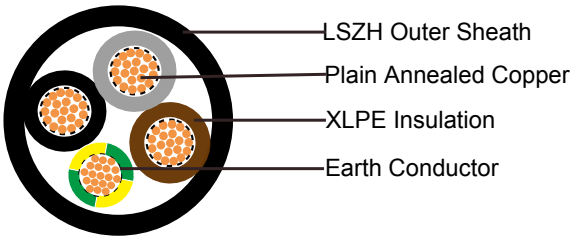
Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 6 x Overall Diameter

ELECTRICAL PROPERTIES

Dielectric test:	3500 V r.m.s. x 5' (core/core)
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

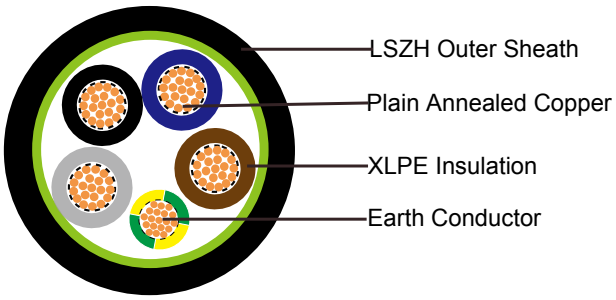
CONSTRUCTION PARAMETERS

Conductor			FTX400 1RZ1-R	
No. of Core X Cross Section / CPC Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Overall Diameter	Approx. Weight
mm^2	No./mm	mm	mm	mm
2 CORES				
2x1.5	7/0.53	0.7	10.0	126
2x2.5	7/0.67	0.7	10.8	158
2x4	7/0.85	0.7	11.9	205
2x6	7/1.04	0.7	13.0	264

Conductor			FTX400 1RZ1-R	
No. of Core X Cross Section / CPC Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Overall Diameter	Approx. Weight
mm^2	No./mm	mm	mm	mm
2x10	7/1.35	0.7	14.9	378
2x16	7/1.70	0.7	17.0	534
2x25	7/2.14	0.9	20.4	650
2x35	7/2.52	0.9	22.7	880
3 CORES				
3x1.5	7/0.53	0.7	10.5	145
3x2.5	7/0.67	0.7	11.4	185
3x4	7/0.85	0.7	12.5	247
3x6	7/1.04	0.7	13.8	323
3x10	7/1.35	0.7	15.8	474
3x16	7/1.70	0.7	18.0	682
3x25	7/2.14	0.9	21.7	910
3x35	7/2.52	0.9	24.0	1180
3x50	19/1.78	1.0	25.5	1600
3x70	19/2.14	1.1	29.0	2240
3x95	19/2.52	1.1	33.5	3050
3x120	37/2.03	1.2	37.5	3800
3x150	37/2.25	1.4	40.5	4640
3x185	37/2.52	1.6	45.0	5870
3x240	61/2.25	1.7	50.5	7670
3x300	61/2.52	1.8	57.0	9460
3x400	61/2.85	2.0	63.0	11945
				
3 CORES + 1 CORE EARTH CONDUCTOR				
3x10/6	7/1.35	0.7	16.5	543
3x16/10	7/1.70	0.7	18.85	793

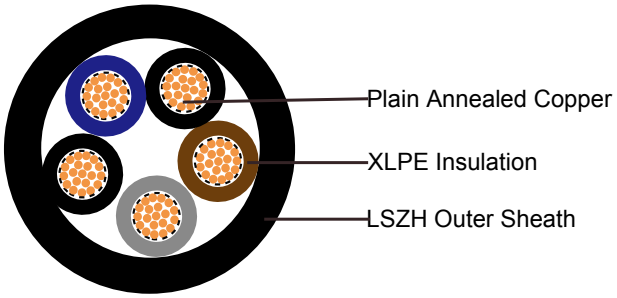
Conductor			FTX400 1RZ1-R	
No. of Core X Cross Section / CPC Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Overall Diameter	Approx. Weight
mm^2	No./mm	mm	mm	mm
3x25/10	7/2.14	0.9	22.1	1021
3x25/16	7/2.14	0.9	23.0	1070
3x35/16	19/1.53	0.9	24.3	1349
3x35/25	19/1.53	0.9	25.2	1470
3x50/16	19/1.78	1	26.1	1769
3x50/25	19/1.78	1	27.3	1890
3x50/35	19/1.78	1	27.8	1995
3x70/25	19/2.14	1.1	30.2	2530
3x70/35	19/2.14	1.1	30.9	2660
3x70/50	19/2.14	1.1	31.5	2840
3x95/16	19/2.52	1.1	34.6	3240
3x95/25	19/2.52	1.1	35.1	3340
3x95/35	19/2.52	1.1	36.0	3470
3x95/50	19/2.52	1.1	36.8	3650
3x120/35	37/2.03	1.2	38.2	3920
3x120/50	37/2.03	1.2	39.1	4400
3x120/70	37/2.03	1.2	40.0	4610
3x120/95	37/2.03	1.2	41.2	4820
3x150/50	37/2.25	1.4	41.5	5240
3x150/50	37/2.25	1.4	42.3	5450
3x150/95	37/2.25	1.4	43.6	5660
3x150/120	37/2.25	1.4	44.8	6240
3x185/70	37/2.52	1.6	46.0	6470
3x185/95	37/2.52	1.6	47.5	6680
3x185/120	37/2.52	1.6	47.9	6990
3x185/150	37/2.52	1.6	48.5	7395
3x240/70	61/2.25	1.7	49.2	7580
3x240/95	61/2.25	1.7	52.3	8480
3x240/120	61/2.25	1.7	53.4	8690
3x240/150	61/2.25	1.7	54.9	9095
3x300/95	61/2.52	1.8	55.6	9380
3x300/120	61/2.52	1.8	58.1	10480
3x300/150	61/2.52	1.8	57.3	11170
3x300/185	61/2.52	1.8	58.7	11480

Conductor			FTX400 1RZ1-R	
No. of Core X Cross Section / CPC Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Overall Diameter	Approx. Weight
mm^2	No./mm	mm	mm	mm
3x300/240	61/2.52	1.8	62.4	11290
4 CORES				
4x1.5	7/0.53	0.7	11.3	169
4x2.5	7/0.67	0.7	12.3	220
4x4	7/0.85	0.7	13.6	297
4x6	7/1.04	0.7	15.0	392
4x10	7/1.35	0.7	17.2	585
4x16	7/1.70	0.7	19.7	851
4x25	7/2.14	0.9	23.9	1200
4x35(S)	7/2.52	0.9	25.0	1600
4x50(S)	19/1.78	1.0	28.0	2200
4x70(S)	19/2.14	1.1	32.0	3050
4x95(S)	19/2.52	1.1	37.0	4070
4x120(S)	37/2.03	1.2	42.0	5915
4x150(S)	37/2.25	1.4	46.0	6350
4x185(S)	37/2.52	1.6	50.0	7890
4x240(S)	61/2.25	1.7	57.0	10400
4x300(S)	61/2.52	1.8	63.0	12810
4x400(S)	61/2.85	2.0	71.0	15869
4x500(S)	61/3.20	2.2	78.0	20300



4 CORES + 1 CORE EARTH CONDUCTOR				
4x10/6	7/1.35	0.7	19	654
4x16/10	7/1.70	0.7	21.95	962
4x25/10	7/2.14	0.7	26.65	1311
4x25/16	7/2.14	0.7	27.3	1369

Conductor			FTX400 1RZ1-R	
No. of Core X Cross Section / CPC Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Overall Diameter	Approx. Weight
mm^2	No./mm	mm	mm	mm
4x35/16	19/1.53	0.9	27.6	1769
4x35/25	19/1.53	0.9	28.4	1890
4x50/16	19/1.78	1	29.4	2369
4x50/25	19/1.78	1	31.6	2490
4x50/35	19/1.78	1	33.6	3249
4x70/25	19/2.14	1.1	34.2	3340
4x70/35	19/2.14	1.1	35.6	3470
4x70/50	19/2.14	1.1	37.8	3650
4x95/16	19/2.52	1.1	41.5	4239
4x95/25	19/2.52	1.1	42.6	4360
4x95/35	19/2.52	1.1	43.3	4510
4x95/50	19/2.52	1.1	44.1	4670
4x120/35	37/2.03	1.2	42.6	6335
4x120/50	37/2.03	1.2	43.8	6515
4x120/70	37/2.03	1.2	45.9	6725
4x120/95	37/2.03	1.2	46.4	6920
4x150/70	37/2.25	1.4	47.3	6950
4x150/95	37/2.25	1.4	48.5	7160
4x150/120	37/2.25	1.4	50.2	7370
4x185/70	37/2.52	1.6	53.7	7965
4x185/95	37/2.52	1.6	52.4	8490
4x185/120	37/2.52	1.6	53.9	8700
4x185/150	37/2.52	1.6	55.6	8910
4x240/70	61/2.25	1.7	59.4	9260
4x240/95	61/2.25	1.7	59.4	9600
4x240/120	61/2.25	1.7	61.9	11210
4x240/150	61/2.25	1.7	63.4	11420
4x300/95	61/2.52	1.8	67.8	12010
4x300/120	61/2.52	1.8	64.0	12110
4x300/150	61/2.52	1.8	66.1	13830
4x300/185	61/2.52	1.8	71.5	14520
4x300/240	61/2.52	1.8	72.0	14830

Conductor			FTX400 1RZ1-R	
No. of Core X Cross Section / CPC Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Overall Diameter	Approx. Weight
mm^2	No./mm	mm	mm	mm
				
5 CORES				
5x1.5	7/0.53	0.7	13.7	205
5x2.5	7/0.67	0.7	14.9	265
5x4	7/0.85	0.7	16.3	360
5x6	7/1.04	0.7	18.2	478
5x10	7/1.35	0.7	20.8	720
5x16	7/1.70	0.7	24.2	1050
5x25	7/2.14	0.9	29.4	1485
5x35	19/1.53	0.9	30.3	1940
5x50	19/1.78	1	34	2667
5x70	19/2.14	1.1	38.5	3698
5x95	19/2.52	1.1	44.6	4934
5x120	37/2.03	1.2	5.8	7171
5x150	37/2.25	1.4	55.6	7699
5x185	37/2.52	1.6	60.4	9566
5x240	61/2.25	1.7	69.1	12610
5x300	61/2.52	1.8	76.4	15532
5x400	61/2.85	2	86.1	19241
(S) - Sectoral Stranded Conductors				
7 CORES				
7x1.5	7/0.53	0.7	12.4	225
7x2.5	7/0.67	0.7	13.8	303
7x4	7/0.85	0.7	15.5	422
10 CORES				
10x1.5	7/0.53	0.7	15.6	325
10x2.5	7/0.67	0.7	17.5	426

Conductor			FTX400 1RZ1-R	
No. of Core X Cross Section / CPC Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Overall Diameter	Approx. Weight
mm^2	No./mm	mm	mm	mm
10x4	7/0.85	0.7	19.7	597
12 CORES				
12x1.5	7/0.53	0.7	16.2	370
12x2.5	7/0.67	0.7	18.1	489
12x4	7/0.85	0.7	20.3	690
19 CORES				
19x1.5	7/0.53	0.7	19.0	516
19x2.5	7/0.67	0.7	21.3	725
19x4	7/0.85	0.7	24.0	1037
27 CORES				
27x1.5	7/0.53	0.7	22.7	712
27x2.5	7/0.67	0.7	25.5	1004
27x4	7/0.85	0.7	28.8	1445
37 CORES				
37x1.5	7/0.53	0.7	25.5	941
37x2.5	7/0.67	0.7	28.7	1334
37x4	7/0.85	0.7	32.5	1932
48 CORES				
48x1.5	7/0.53	0.7	29.0	1186
48x2.5	7/0.67	0.7	32.9	1706
48x4	7/0.85	0.7	37.3	2479

Note : Other conductor sizes & core confi gurations are available upon request.

ELECTRICAL PROPERTIES

Conductor Operating Temperature : 90°C

Ambient Temperature : 30°C

Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 4 (enclosed in conduit in thermally insulating wall etc)	Reference Method 3 (enclosed in conduit on a wall or in trunking etc)	Reference Method 1 (clipped direct)	Reference Method 11 (on a perforated cable tray, horizontal or vertical)	Reference Method 12(free air)		
					Horizontal flat spaced	Vertical flat spaced	Trefoil

	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or 3 c ables three phase	2 cables, single-phase a.c. or d.c. or 3 cables three phase	3 cables, trefoil 3-phase a.c.
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.5	18	17	22	19	25	23	-	-	-	-	-
2.5	24	23	30	26	34	31	-	-	-	-	-
4	33	30	40	35	46	41	-	-	-	-	-
6	43	39	51	45	59	54	-	-	-	-	-
10	58	53	71	63	81	74	-	-	-	-	-
16	76	70	95	85	109	99	-	-	-	-	-
25	100	91	126	111	143	130	158	140	183	163	138
35	125	111	156	138	176	161	195	176	226	203	171
50	149	135	189	168	228	209	293	215	274	246	209
70	189	170	240	214	293	268	308	279	351	318	270
95	228	205	290	259	355	326	375	341	426	389	330
120	263	235	336	299	413	379	436	398	495	453	385
150	300	270	375	328	476	436	505	461	570	524	445
185	341	306	426	370	545	500	579	530	651	600	511
240	400	358	500	433	644	590	686	630	769	711	606
300	459	410	573	493	743	681	794	730	886	824	701
400	-	-	684	584	868	793	915	849	1065	994	820
500	-	-	783	666	990	904	1044	973	1228	1150	936

Voltage Drop (Per Amp Per Meter)

Size of conductor	2 cables d.c.	2 cables, single-phase a.c.		3 or 4 cables, 3-phase a.c.		
		Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)	Ref. Methods 1 and 11 (clipped direct or on trays touching)	Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)	Ref. Methods 1, 11 and 12 (in trefoil)	Ref. Methods 1 and 11 (Flat and touching)
1	2	3	4	5	6	7
mm^2	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m
1.5	31	31	27	27	27	27
2.5	19	19	16	16	16	16

4	33	12			10			10			10			10		
6	7.8	7.9			6.8			6.8			6.8			6.8		
10	4.7	4.7			4.7			4			4			4		
16	2.9	2.9			2.9			2.5			2.5			2.5		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.85	1.85	0.31	1.90	1.85	0.190	1.85	1.60	0.27	1.65	1.600	0.165	1.600	1.600	0.190	1.600
35	1.35	1.35	0.29	1.35	1.35	0.180	1.35	1.15	0.25	1.15	1.150	0.155	1.50	1.150	0.180	1.150
50	0.99	1.00	0.29	1.05	0.99	0.180	1.00	0.87	0.25	0.90	0.860	0.155	0.870	0.860	0.180	0.870
70	0.68	0.70	0.28	0.75	0.68	0.175	0.71	0.60	0.24	0.65	0.590	0.150	0.610	0.590	0.175	0.620
95	0.49	0.51	0.27	0.58	0.49	0.170	0.52	0.44	0.23	0.50	0.430	0.145	0.450	0.430	0.170	0.460
120	0.39	0.41	0.26	0.48	0.39	0.165	0.43	0.35	0.23	0.42	0.340	0.140	0.370	0.340	0.165	0.380
150	0.32	0.33	0.26	0.43	0.32	0.165	0.36	0.29	0.23	0.37	0.280	0.140	0.310	0.280	0.165	0.320
185	0.25	0.27	0.26	0.37	0.26	0.165	0.30	0.23	0.23	0.32	0.220	0.140	0.260	0.220	0.165	0.280
240	0.19	0.21	0.26	0.33	0.20	0.160	0.25	0.185	0.22	0.29	0.170	0.140	0.220	0.170	0.165	0.240
300	0.155	0.175	0.25	0.31	0.16	0.160	0.22	0.150	0.22	0.27	0.140	0.140	0.195	0.135	0.160	0.210
400	0.12	0.140	0.25	0.29	0.13	0.155	0.20	0.125	0.22	0.25	0.110	0.135	0.175	0.110	0.160	0.195
500	0.093	0.120	0.25	0.28	0.105	0.155	0.185	0.100	0.22	0.24	0.090	0.135	0.160	0.088	0.160	0.180

Rated Voltage

Standard

Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1

Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24
EN50266-2-4

Low Toxicity
NES 02-713/NF C 20-454

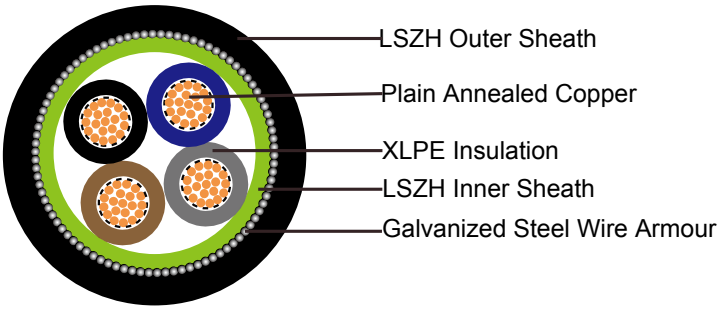
Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074

Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

Halogen Free
IEC60754-1
EN50267-2-1

600/1000V XLPE Insulated, LSZH Sheathed, Armoured Cables to IEC 60502-1 (2-5 Cores & Multicore)

FTX400 1RZ1MZ1-R (CU/XLPE/LSZH/SWA/LSZH 600/1000V Class 2)



APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design adapted to IEC 60502-1

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC 60228 class 2.
Insulation: Extruded cross-linked XLPE compound.
Inner Sheath: LSZH Compound
Armouring: Galvanized Steel Wire
Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 10 x Overall Diameter

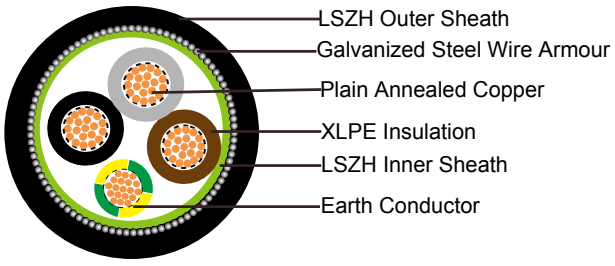
ELECTRICAL PROPERTIES

Dielectric test:	3500 V r.m.s. x 5' (core/core)
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

Conductor			FTX400 1RZ1MZ1-R			
No. of Core X Cross Section / CPC Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Diameter Under Armour	Armour Wire Diameter	Nominal Overall Diameter	Approx. Weight
mm^2	No./mm	mm	mm	mm	mm	kg/km
2 CORES						
2x1.5	7/0.53	0.7	8.5	0.9	13.9	350
2x2.5	7/0.67	0.7	9.3	0.9	14.7	400
2x4	7/0.85	0.7	10.4	0.9	15.8	475
2x6	7/1.04	0.7	11.5	0.9	16.9	560

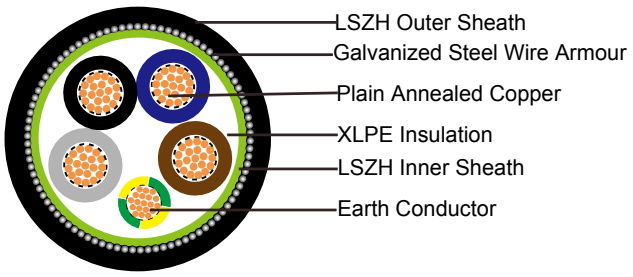
Conductor			FTX400 1RZ1MZ1-R			
No. of Core X Cross Section / CPC Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Diameter Under Armour	Armour Wire Diameter	Nominal Overall Diameter	Approx. Weight
mm^2	No./mm	mm	mm	mm	mm	kg/km
2x10	7/1.35	0.7	13.4	1.25	19.5	810
2x16	7/1.70	0.7	15.5	1.25	21.6	980
2x25	7/2.14	0.9	18.9	1.6	25.7	1410
2x35	7/2.52	0.9	21.2	1.6	28.0	1930
3 CORES						
3x1.5	7/0.53	0.7	9.0	0.9	14.4	390
3x2.5	7/0.67	0.7	9.9	0.9	15.3	450
3x4	7/0.85	0.7	11.0	0.9	16.4	540
3x6	7/1.04	0.7	11.6	1.25	17.7	745
3x10	7/1.35	0.7	14.3	1.25	20.4	950
3x16	7/1.70	0.7	16.5	1.25	23.0	1250
3x25	7/2.14	0.9	20.2	1.6	27.0	1840
3x35	7/2.52	0.9	22.4	1.6	29.2	2050
3x50	19/1.78	1.0	24.2	1.6	31.2	2590
3x70	19/2.14	1.1	28.2	2.0	36.2	3560
3x95	19/2.52	1.1	31.7	2.0	40.1	4590
3x120	37/2.03	1.2	36.0	2.0	44.6	5810
3x150	37/2.25	1.4	39.5	2.5	49.5	6920
3x185	37/2.52	1.6	43.3	2.5	53.5	8340
3x240	61/2.25	1.7	48.4	2.5	59.0	10450
3x300	61/2.52	1.8	54.4	2.5	65.4	12700
3x400	61/2.85	2.0	57.8	2.5	70.0	15326



3 CORES + 1 CORE EARTH CONDUCTOR						
3x10/6	7/1.35	0.7	17.6	1.25	20.1	1042
3x16/10	7/1.70	0.7	20.6	1.25	22.5	1567

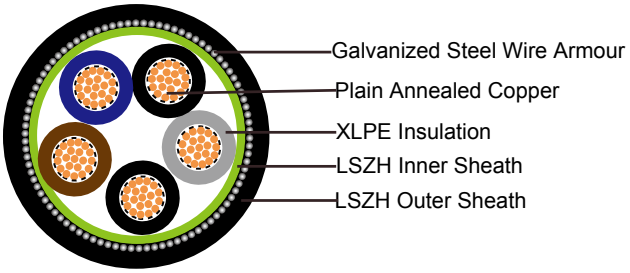
Conductor			FTX400 1RZ1MZ1-R			
No. of Core X Cross Section / CPC Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Diameter Under Armour	Armour Wire Diameter	Nominal Overall Diameter	Approx. Weight
mm^2	No./mm	mm	mm	mm	mm	kg/km
3x25/10	7/2.14	0.9	26.3	1.25	23.6	2091
3x25/16	7/2.14	0.9	26.6	1.25	25.8	2150
3x35/16	19/1.53	0.9	26.8	1.6	27.7	2390
3x35/25	19/1.53	0.9	27.2	1.6	28.6	2505
3x50/16	19/1.78	1	28.5	1.6	29.8	2916
3x50/25	19/1.78	1	29.2	1.6	31.3	3107
3x50/35	19/1.78	1	30.0	1.6	32.0	3175
3x70/25	19/2.14	1.1	34.0	2.0	35.0	3203
3x70/35	19/2.14	1.1	34.5	2.0	35.9	4067
3x70/50	19/2.14	1.1	35	2.0	36.8	4310
3x95/16	19/2.52	1.1	36.3	2.0	38.0	4856
3x95/25	19/2.52	1.1	36.7	2.0	39.3	5047
3x95/35	19/2.52	1.1	37.2	2.0	40.2	5115
3x95/50	19/2.52	1.1	37.6	2.0	41.4	5289
3x120/35	37/2.03	1.2	39.4	2.5	44.0	6160
3x120/50	37/2.03	1.2	39.9	2.5	44.9	6473
3x120/70	37/2.03	1.2	40.3	2.5	45.6	6793
3x120/95	37/2.03	1.2	41.2	2.5	46.8	7120
3x150/50	37/2.25	1.4	45.0	2.5	49.7	7549
3x150/50	37/2.25	1.4	45.2	2.5	49.8	7565
3x150/95	37/2.25	1.4	45.5	2.5	50.8	8196
3x150/120	37/2.25	1.4	46.0	2.5	51.8	8590
3x185/70	37/2.52	1.6	50.4	2.5	54.0	8950
3x185/95	37/2.52	1.6	50.6	2.5	54.7	9573
3x185/120	37/2.52	1.6	51.0	2.5	55.8	9968
3x185/150	37/2.52	1.6	51.6	2.5	56.6	1023
3x240/70	61/2.25	1.7	57.0	2.5	56.0	11294
3x240/95	61/2.25	1.7	58.0	2.5	57.9	11620
3x240/120	61/2.25	1.7	59.0	2.5	61.0	12015
3x240/150	61/2.25	1.7	60.0	2.5	62.2	12373
3x300/95	61/2.52	1.8	63	2.5	64.7	13803
3x300/120	61/2.52	1.8	64.2	2.5	65.9	14197

Conductor			FTX400 1RZ1MZ1-R			
No. of Core X Cross Section / CPC Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Diameter Under Armour	Armour Wire Diameter	Nominal Overall Diameter	Approx. Weight
mm^2	No./mm	mm	mm	mm	mm	kg/km
3x300/150	61/2.52	1.8	65.7	2.5	66.8	14556
3x300/185	61/2.52	1.8	66.4	2.5	68.1	15015
3x300/240	61/2.52	1.8	67	2.5	69.4	15697
4 CORES						
4x1.5	7/0.53	0.7	10.0	0.9	15.4	430
4x2.5	7/0.67	0.7	10.8	0.9	16.2	505
4x4	7/0.85	0.7	12.1	0.9	17.5	710
4x6	7/1.04	0.7	13.5	1.25	19.6	855
4x10	7/1.35	0.7	15.7	1.25	21.8	1120
4x16	7/1.70	0.7	18.2	1.6	25.0	1600
4x25	7/2.14	0.9	22.4	1.6	29.2	2160
4x35(S)	7/2.52	0.9	24.4	1.6	31.4	2560
4x50(S)	19/1.78	1.0	28.0	1.6	35.2	3180
4x70(S)	19/2.14	1.1	32.2	2.0	40.6	4490
4x95(S)	19/2.52	1.1	36.0	2.0	44.6	5725
4x120(S)	37/2.03	1.2	38.0	2.5	50.0	7550
4x150(S)	37/2.25	1.4	42.8	2.5	53.0	8555
4x185(S)	37/2.52	1.6	48.4	2.5	59.0	10560
4x240(S)	61/2.25	1.7	55.0	2.5	66.0	13180
4x300(S)	61/2.52	1.8	59.6	2.5	71.0	16100
4x400(S)	61/2.85	2.0	66.1	3.15	79.4	20715
4x500(S)	61/3.20	2.2	74.6	3.15	88.5	25347



4 CORES + 1 CORE EARTH CONDUCTOR

Conductor			FTX400 1RZ1MZ1-R			
No. of Core X Cross Section / CPC Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Diameter Under Armour	Armour Wire Diameter	Nominal Overall Diameter	Approx. Weight
mm^2	No./mm	mm	mm	mm	mm	kg/km
4x10/6	7/1.35	0.7	17.6	1.25	26.1	1362
4x16/10	7/1.70	0.7	20.6	1.25	27.3	1473
4x25/10	7/2.14	0.7	26.3	1.25	32.6	1680
4x25/16	7/2.14	0.7	26.6	1.25	33.4	2012
4x35/16	19/1.53	0.9	25.6	1.6	44.5	2940
4x35/25	19/1.53	0.9	26.2	1.6	46.2	3050
4x50/16	19/1.78	1	28.5	1.6	48.2	3560
4x50/25	19/1.78	1	29.2	1.6	49.9	3670
4x50/35	19/1.78	1	30.0	1.6	42.5	3759
4x70/25	19/2.14	1.1	34	2.0	55.1	4980
4x70/35	19/2.14	1.1	34.5	2.0	44.9	5036
4x70/50	19/2.14	1.1	35	2.0	45.9	5468
4x95/16	19/2.52	1.1	36.3	2.0	47.3	6105
4x95/25	19/2.52	1.1	36.7	2.0	49.0	6215
4x95/35	19/2.52	1.1	37.2	2.0	50.1	6325
4x95/50	19/2.52	1.1	37.6	2.0	51.7	6455
4x120/35	37/2.03	1.2	39.4	2.5	54.2	7968
4x120/50	37/2.03	1.2	39.9	2.5	56.9	8280
4x120/70	37/2.03	1.2	40.3	2.5	57.9	8511
4x120/95	37/2.03	1.2	41.2	2.5	61.2	8790
4x150/70	37/2.25	1.4	45.2	2.5	56.5	8879
4x150/95	37/2.25	1.4	45.5	2.5	57.6	10179
4x150/120	37/2.25	1.4	46.0	2.5	58.7	10739
4x185/70	37/2.52	1.6	50.4	2.5	62.0	11200
4x185/95	37/2.52	1.6	50.6	2.5	63.2	1263
4x185/120	37/2.52	1.6	51.0	2.5	64.2	13050
4x185/150	37/2.52	1.6	51.6	2.5	65.4	13680
4x240/70	61/2.25	1.7	57	2.5	66.9	14140
4x240/95	61/2.25	1.7	58	2.5	68.7	14420
4x240/120	61/2.25	1.7	59.0	2.5	72.8	14763
4x240/150	61/2.25	1.7	60.0	2.5	73.1	15241
4x300/95	61/2.52	1.8	63	2.5	74.6	17467

Conductor			FTX400 1RZ1MZ1-R			
No. of Core X Cross Section / CPC Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Diameter Under Armour	Armour Wire Diameter	Nominal Overall Diameter	Approx. Weight
mm^2	No./mm	mm	mm	mm	mm	kg/km
4x300/120	61/2.52	1.8	64.2	2.5	75.1	18050
4x300/150	61/2.52	1.8	65.7	2.5	76.4	18662
4x300/185	61/2.52	1.8	67	2.5	77.3	19031
4x300/240	61/2.52	1.8	67	2.5	78.6	19878
						
5 CORES						
5x1.5	7/0.53	0.7	9.9	0.9	18.6	537
5x2.5	7/0.67	0.7	10.8	0.9	19.6	631
5x4	7/0.85	0.7	12.1	0.9	21.2	860
5x6	7/1.04	0.7	15.8	1.5	23.7	1036
5x10	7/1.35	0.7	24	2.8	26.0	1358
5x16	7/1.70	0.7	27	2.8	30.0	1940
5x25	7/2.14	0.9	34	2.8	35.4	2619
5x35	19/1.53	0.9	24.4	1.6	38.1	3140
5x50	19/1.78	1	28.0	1.6	42.6	3555
5x70	19/2.14	1.1	32.2	2.0	49.2	5444
5x95	19/2.52	1.1	36.0	2.0	54.1	6941
5x120	37/2.03	1.2	38.0	2.5	60.6	9154
5x150	37/2.25	1.4	42.8	2.5	64.3	10372
5x185	37/2.52	1.6	48.4	2.5	71.5	12828
5x240	61/2.25	1.7	55.0	2.5	80	15980
5x300	61/2.52	1.8	59.6	2.5	86.1	19521
5x400	61/2.85	2	66.1	3.15	96.3	25116
(S) - Sectoral Stranded Conductors						
7 CORES						
7x1.5	7/0.53	0.7	11.2	0.9	16.0	490
7x2.5	7/0.67	0.7	12.4	0.9	17.2	602

Conductor			FTX400 1RZ1MZ1-R			
No. of Core X Cross Section / CPC Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Diameter Under Armour	Armour Wire Diameter	Nominal Overall Diameter	Approx. Weight
mm^2	No./mm	mm	mm	mm	mm	kg/km
7x4	7/0.85	0.7	14.1	1.25	19.8	871
10 CORES						
10x1.5	7/0.53	0.7	14.3	1.25	20.0	761
10x2.5	7/0.67	0.7	15.9	1.25	21.8	943
10x4	7/0.85	0.7	18.5	1.25	24.4	1213
12 CORES						
12x1.5	7/0.53	0.7	14.8	1.25	20.5	827
12x2.5	7/0.67	0.7	16.5	1.25	22.4	1020
12x4	7/0.85	0.7	19.1	1.6	25.7	1462
19 CORES						
19x1.5	7/0.53	0.7	17.4	1.6	24.0	1186
19x2.5	7/0.67	0.7	19.9	1.6	26.7	1498
19x4	7/0.85	0.7	22.6	1.6	29.4	1931
27 CORES						
27x1.5	7/0.53	0.7	21.3	1.6	28.1	1537
27x2.5	7/0.67	0.7	23.9	1.6	30.9	1933
27x4	7/0.85	0.7	27.2	1.6	34.4	2532
37 CORES						
37x1.5	7/0.53	0.7	23.9	1.6	30.7	1856
37x2.5	7/0.67	0.7	26.9	1.6	33.9	2372
37x4	7/0.85	0.7	31.1	2.0	39.3	3448
48 CORES						
48x1.5	7/0.53	0.7	27.5	1.6	34.6	2276
48x2.5	7/0.67	0.7	31.3	2.0	39.6	3252
48x4	7/0.85	0.7	35.7	2.0	44.2	4273

Note : Other conductor sizes & core confi gurations are available upon request.

ELECTRICAL PROPERTIES
Conductor Operating Temperature : 90°C
Ambient Temperature : 30°C

Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated horizontal cable trayor Reference Method 13 [free air])		In single-way ducts		Laid direct in ground	
	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.
1	2	3	4	5	6	7	8	9
mm^2	A	A	A	A	A	A	A	A
1.5	27	23	29	25	-	23	-	28
2.5	36	31	39	33	-	30	-	36
4	49	42	52	44	-	40	-	48
6	62	53	66	56	-	50	-	60
10	85	73	90	78	-	65	-	80
16	110	94	115	99	115	94	140	115
25	146	124	152	131	145	125	180	150
35	180	154	188	162	175	150	215	180
50	219	187	228	197	210	175	255	215
70	279	238	291	251	260	215	315	265
95	338	289	354	304	310	260	380	315
120	392	335	410	353	355	300	430	360
150	451	386	472	406	400	335	480	405
185	515	441	539	463	455	380	540	460
240	607	520	636	546	520	440	630	530
300	698	599	732	628	590	495	700	590
400	787	673	847	728	660	560	790	670

Voltage Drop (Per Amp Per Meter)

Conductor cross-sectional area	2-core cable d.c.	2 cables, single-phase a.c.			3 or 4 cables, 3-phase a.c.			2 cables, single-phase a.c.	3 or 4 cables, 3-phase a.c.
								In ducts or in ground	In ducts or in ground
1	2	3			4			5	6
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m	mV/A/m
1.5	31.0	31.0			27.0			31.0	25.0
2.5	19.0	19.0			16.0			19.0	15.0
4	12.0	12.0			10.0			12.0	9.7
6	7.9	7.9			6.8			7.9	6.5
10	4.7	4.7			4.0			4.7	3.9
16	2.9	2.9			2.5			2.9	2.6
		r	x	z	r	x	z		
25	1.850	1.350	0.160	1.900	1.600	0.140	1.650	1.900	1.600
35	1.350	1.350	0.155	1.350	1.150	0.135	1.150	1.350	1.200
50	0.980	0.990	0.155	1.000	0.860	0.135	0.870	1.000	0.870
70	0.670	0.670	0.150	0.690	0.590	0.130	0.600	0.690	0.610
95	0.490	0.500	0.150	0.520	0.430	0.130	0.450	0.520	0.450
120	0.390	0.400	0.145	0.420	0.340	0.130	0.370	0.420	0.360
150	0.310	0.320	0.145	0.350	0.280	0.125	0.300	0.350	0.300
185	0.250	0.260	0.145	0.290	0.220	0.125	0.260	0.290	0.250
240	0.195	0.200	0.140	0.240	0.175	0.125	0.210	0.240	0.210
300	0.155	0.160	0.140	0.210	0.140	0.120	0.185	0.210	0.190
400	0.120	0.130	0.140	0.190	0.115	0.120	0.165	0.190	0.180

Rated Voltage

Standard


Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1


Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24
EN50266-2-4


Low Toxicity
NES 02-713/NF C 20-454

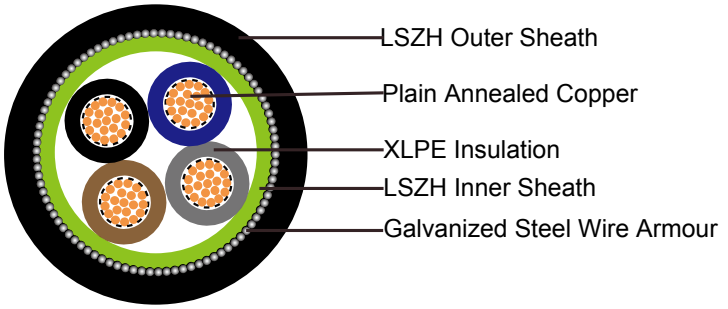

Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074


Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

Halogen Free
IEC60754-1
EN50267-2-1

600/1000V XLPE Insulated, LSZH Sheathed, Armoured Cables to BS 6724 (2-5 Cores & Multicore)

FTX400 1RZ1MZ1-R (CU/XLPE/LSZH/SWA/LSZH 600/1000V Class 2)



APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design adapted to BS 6724

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC 60228 class 2.
Insulation: Extruded cross-linked XLPE compound.
Inner Sheath: LSZH Compound
Armouring: Galvanized Steel Wire
Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 10 x Overall Diameter

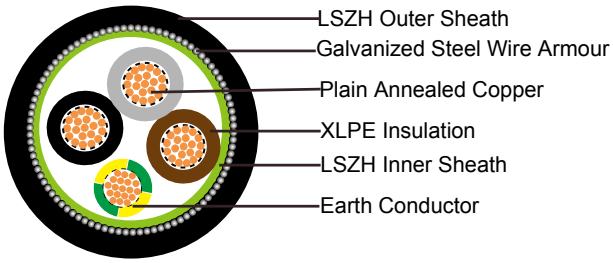
ELECTRICAL PROPERTIES

Dielectric test:	3500 V r.m.s. x 5' (core/core)
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

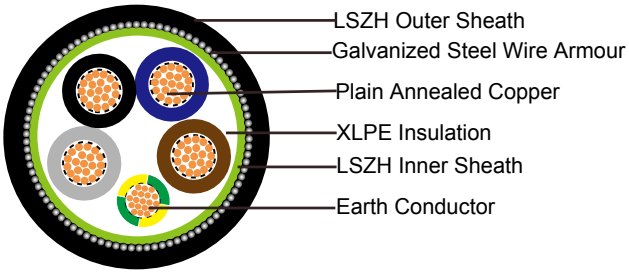
No. of Core X Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Bedding Thickness	Nominal Steel Wire Armor Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Aprrox. Weight
No./mm²	No./mm	mm	mm	mm	mm	mm	kg/km
2 CORES							
2x1.5	7/0.53	0.6	0.8	0.9	1.4	12.1	320
2x2.5	7/0.67	0.7	0.8	0.9	1.4	13.6	365
2x4	7/0.85	0.7	0.8	0.9	1.4	14.7	440
2x6	7/1.04	0.7	0.8	0.9	1.4	15.9	470
2x10	7/1.35	0.7	0.8	0.9	1.5	18.0	800

No. of Core X Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Bedding Thickness	Nominal Steel Wire Armor Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Aprrox. Weight
No./mm²	No./mm	mm	mm	mm	mm	mm	kg/km
2x16	7/1.70	0.7	0.8	1.25	1.5	20.4	900
2x25	7/2.14	0.9	0.8	1.25	1.6	24.1	1240
2x25*	7/2.14	0.9	0.8	1.25	1.6	20.4	1240
2x35	7/2.52	0.9	1	1.6	1.7	27.7	1710
2x35*	7/2.52	0.9	1	1.6	1.7	23.3	1710
2x50*	19/1.78	1.0	1	1.6	1.8	25.8	1800
2x70*	19/2.14	1.1	1	1.6	1.9	29.0	2320
2x95*	19/2.52	1.1	1.2	2.0	2.0	33.0	3150
2x120*	37/2.03	1.2	1.2	2.0	2.1	36.1	3880
2x150*	37/2.25	1.4	1.2	2.0	2.2	39.3	4820
2x185*	37/2.52	1.6	1.4	2.5	2.4	44.7	5920
2x240*	61/2.25	1.7	1.4	2.5	2.5	49.0	7300
2x300*	61/2.52	1.8	1.6	2.5	2.6	53.5	8770
2x400*	61/2.85	2	1.6	2.5	2.8	59.0	10905
* D-Shaped stranded conductor (class 2)							
3 CORES							
3x1.5	7/0.53	0.6	0.8	0.9	1.3	12.6	340
3x2.5	7/0.67	0.7	0.8	0.9	1.4	14.1	408
3x4	7/0.85	0.7	0.8	0.9	1.4	15.3	498
3x6	7/1.04	0.7	0.8	0.9	1.4	16.6	600
3x10	7/1.35	0.7	0.8	1.25	1.5	19.5	915
3x16	7/1.70	0.7	0.8	1.25	1.6	21.6	1130
3x25	7/2.14	0.9	1	1.6	1.7	26.7	1710
3x25*	7/2.14	0.9	1	1.6	1.7	23.6	1710
3x35	7/2.52	0.9	1	1.6	1.8	29.4	2100
3x35*	7/2.52	0.9	1	1.6	1.8	25.7	2100
3x50*	19/1.78	1.0	1	1.6	1.8	28.5	2450
3x70*	19/2.14	1.1	1	1.6	1.9	32.2	3120
3x95*	19/2.52	1.1	1.2	2.0	2.1	37.0	4310
3x120*	37/2.03	1.2	1.2	2.0	2.2	40.4	5160
3x150*	37/2.25	1.4	1.4	2.5	2.3	45.5	7160

No. of Core X Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Bedding Thickness	Nominal Steel Wire Armor Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Aprrox. Weight
No./mm²	No./mm	mm	mm	mm	mm	mm	kg/km
3x185*	37/2.52	1.6	1.4	2.5	2.4	49.8	8600
3x240*	61/2.25	1.7	1.4	2.5	2.6	55.1	10755
3x300*	61/2.52	1.8	1.6	2.5	2.7	60.2	13080
3x400*	61/2.85	2	1.6	2.5	2.9	66.6	15810
*Shaped stranded conductor (class 2)							
							
3 CORES + 1 EARTH CONDUCTOR							
3x16/6	7/1.70	0.7	0.8	0.9	1.4	22.6	1342
3x16/10	7/1.70	0.7	0.8	0.9	1.4	23.0	1567
3x25/6	7/2.14	0.9	0.8	0.9	1.4	27.1	1876
3x25/10	7/2.14	0.9	1	1.6	1.7	27.6	2091
3x25/16	7/2.14	0.9	1	1.6	1.7	28.3	2150
3x35/10	7/2.52	0.9	1	1.6	1.8	28.9	2210
3x35/16	7/2.52	0.9	1	1.6	1.8	29.5	2390
3x35/25	7/2.52	0.9	1	1.6	1.8	30.0	2505
3×50/16	19/1.78	0.9	1	1.6	1.9	29.0	2916
3x50/25	19/1.78	1.0	1	1.6	1.9	30.0	3107
3x50/35	19/1.78	1.0	1	1.6	1.9	31.0	3175
3×70/25	19/2.14	1.1	1.2	2.0	2.1	32.9	3203
3x70/35	19/2.14	1.1	1.2	2.0	2.1	34.5	4067
3x70/50	19/2.14	1.1	1.2	2.0	2.1	36.3	4310
3×95/25	19/2.52	1.1	1.2	2.0	2.2	38.0	5047
3×95/35	19/2.52	1.1	1.2	2.0	2.2	38.6	5115
3x95/50	19/2.52	1.1	1.2	2.0	2.2	39.2	5289
3x95/70	19/2.52	1.1	1.2	2.0	2.2	40.0	5360
3×120/35	37/2.03	1.2	1.4	2.5	2.3	41.2	6160

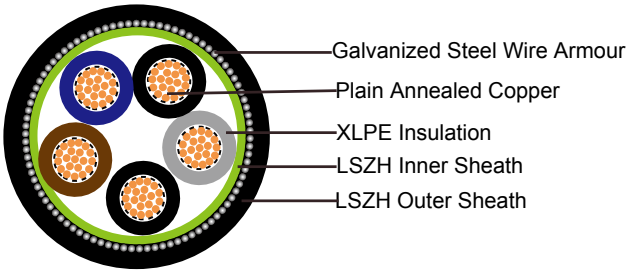
No. of Core X Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Bedding Thickness	Nominal Steel Wire Armor Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Aprrox. Weight
No./mm²	No./mm	mm	mm	mm	mm	mm	kg/km
3×120/50	37/2.03	1.2	1.4	2.5	2.3	42.3	6473
3x120/70	37/2.03	1.2	1.4	2.5	2.3	44.6	6793
3×120/95	37/2.03	1.2	1.4	2.5	2.3	46.2	7120
3×150/50	37/2.25	1.4	1.4	2.5	2.4	57.0	7431
3×150/70	37/2.25	1.4	1.4	2.5	2.4	58.1	7565
3x150/95	37/2.25	1.4	1.4	2.5	2.4	59.4	8196
3x150/120	37/2.25	1.4	1.4	2.5	2.4	50.6	8590
3×185/70	37/2.52	1.6	1.6	2.5	2.6	51.6	8950
3x185/95	37/2.52	1.6	1.6	2.5	2.6	53.2	9573
3x185/120	37/2.52	1.6	1.6	2.5	2.6	54.3	9968
3x185/150	37/2.52	1.6	1.6	2.5	2.6	55.3	1023
3×240/95	61/2.25	1.7	1.6	2.5	2.7	56.7	11620
3x240/120	61/2.25	1.7	1.6	2.5	2.7	58.3	12015
3x240/150	61/2.25	1.7	1.6	2.5	2.7	60.4	12373
3x240/185	61/2.25	1.7	1.6	2.5	2.7	62.1	1350
3x300/120	61/2.52	1.8	1.6	2.5	2.9	63.5	14197
3x300/150	61/2.52	1.8	1.6	2.5	2.9	64.9	14556
3x300/185	61/2.52	1.8	1.6	2.5	2.9	66.2	15015
3x300/240	61/2.52	1.8	1.6	2.5	2.9	67.4	15697
4 CORES							
4x1.5	7/0.53	0.7	0.8	0.9	1.4	13.3	390
4x2.5	7/0.67	0.7	0.8	0.9	1.4	15.0	470
4x4	7/0.85	0.7	0.8	0.9	1.4	16.4	580
4x6	7/1.04	0.7	0.8	1.25	1.5	18.7	805
4x10	7/1.35	0.7	0.8	1.25	1.5	21.1	1090
4x16	7/1.70	0.7	0.8	1.25	1.6	23.4	1320
4x25	7/2.14	0.9	1	1.6	1.7	28.9	1840
4x25*	7/2.14	0.9	1	1.6	1.7	26.1	1840
4x35	7/2.52	0.9	1	1.6	1.8	31.9	2310
4x35*	7/2.52	0.9	1	1.6	1.8	28.6	2310
4x50*	19/1.78	1.0	1	1.6	1.9	32.0	2970
4x70*	19/2.14	1.1	1.2	2.0	2.1	37.7	4240

No. of Core X Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Bedding Thickness	Nominal Steel Wire Armor Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Aprrox. Weight
No./mm²	No./mm	mm	mm	mm	mm	mm	kg/km
4x95*	19/2.52	1.1	1.2	2.0	2.2	41.7	5400
4x120*	37/2.03	1.2	1.4	2.5	2.3	47.1	7000
4x150*	37/2.25	1.4	1.4	2.5	2.4	51.4	8350
4x185*	37/2.52	1.6	1.4	2.5	2.6	56.6	10130
4x240*	61/2.25	1.7	1.6	2.5	2.7	63.0	12840
4x300*	61/2.52	1.8	1.6	2.5	2.9	68.8	15530
4x400*	61/2.85	2	1.8	3.15	3.2	78.1	19950
* Shaped stranded conductor (class 2)							



4 CORES + 1 EARTH CONDUCTOR							
4x16/6	7/1.35	0.7	0.8	0.9	1.4	25.1	1356
4x16/10	7/1.70	0.7	0.8	0.9	1.4	26.0	1390
4x25/6	7/2.14	0.7	0.8	0.9	1.4	29.0	1900
4x25/10	7/2.14	0.9	1	1.6	1.7	29.4	1956
4x25/16	7/2.14	0.9	1	1.6	1.7	30.0	2012
4×35/10	7/2.52	0.9	1	1.6	1.8	32.1	2710
4×35/16	7/2.52	0.9	1	1.6	1.8	33.4	2940
4×35/25	7/2.52	0.9	1	1.6	1.8	34.0	3050
4×50/16	19/1.78	1.0	1	1.6	1.9	33	3560
4×50/25	19/1.78	1.0	1	1.6	1.9	35.6	3670
4x50/35	19/1.78	1.0	1	1.6	1.9	38.2	3759
4×70/25	19/2.14	1.1	1.2	2.0	2.1	38.6	4980
4x70/35	19/2.14	1.1	1.2	2.0	2.1	40.6	5036
4x70/50	19/2.14	1.1	1.2	2.0	2.1	42.9	5468
4×95/25	19/2.52	1.1	1.2	2.0	2.2	43.2	6215

No. of Core X Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Bedding Thickness	Nominal Steel Wire Armor Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Aprrox. Weight
No./mm²	No./mm	mm	mm	mm	mm	mm	kg/km
4×95/35	19/2.52	1.1	1.2	2.0	2.2	46.3	6325
4×95/50	19/2.52	1.1	1.2	2.0	2.2	48.5	6455
4×95/50	19/2.52	1.1	1.2	2.0	2.2	50.7	6954
3×120/35	37/2.03	1.2	1.4	2.5	2.3	54.2	7968
4×120/50	37/2.03	1.2	1.4	2.5	2.3	55.3	8280
4x120/70	37/2.03	1.2	1.4	2.5	2.3	55.9	8511
4×120/95	37/2.03	1.2	1.4	2.5	2.3	56.4	8790
4×150/50	37/2.25	1.4	1.4	2.5	2.4	55.3	8723
4×150/70	37/2.25	1.4	1.4	2.5	2.4	56.48	8879
4x150/95	37/2.25	1.4	1.4	2.5	2.4	57.59	10179
4x150/120	37/2.25	1.4	1.4	2.5	2.4	58.65	10739
4×185/70	37/2.52	1.6	1.6	2.5	2.6	62.03	11200
4x185/95	37/2.52	1.6	1.6	2.5	2.6	63.19	1263
4x185/120	37/2.52	1.6	1.6	2.5	2.6	64.23	13050
4x185/150	37/2.52	1.6	1.6	2.5	2.6	65.38	13680
4×240/95	61/2.25	1.7	1.6	2.5	2.7	71.53	14420
4x240/120	61/2.25	1.7	1.6	2.5	2.7	72.76	14763
4x240/150	61/2.25	1.7	1.6	2.5	2.7	73.10	15241
4x240/185	61/2.25	1.7	1.6	2.5	2.7	74.0	1682
4x300/150	61/2.52	1.8	1.6	2.5	2.9	75.08	18050
4x300/150	61/2.52	1.8	1.6	2.5	2.9	76.44	18662
4x300/185	61/2.52	1.8	1.6	2.5	2.9	77.30	19031
4x300/240	61/2.52	1.8	1.6	2.5	2.9	78.55	19878



5 CORES							
5x1.5	7/0.53	0.6	0.8	0.9	1.4	14.3	430

No. of Core X Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Bedding Thickness	Nominal Steel Wire Armor Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Aprrox. Weight
No./mm²	No./mm	mm	mm	mm	mm	mm	kg/km
5x2.5	7/0.67	0.7	0.8	0.9	1.4	16.1	545
5x4	7/0.85	0.7	0.8	0.9	1.5	17.8	680
5x6	7/1.04	0.7	0.8	1.25	1.5	20	840
5x10	7/1.35	0.7	0.8	1.25	1.6	22.9	1105
5x16	7/1.70	0.7	1	1.6	1.7	26.6	1450
5x25	7/2.14	0.9	1	1.6	1.8	31.5	2245
5x35	7/2.52	0.9	1	1.6	1.9	34.8	2840
5x50	19/1.78	1.0	1.2	2	2	40.4	3895
5x70	19/2.14	1.1	1.2	2	2.2	46.3	5145
7 CORES							
7x1.5	7/0.53	0.6	0.8	0.9	1.4	15.2	500
7x2.5	7/0.67	0.7	0.8	0.9	1.4	17.1	730
7x4	7/0.85	0.7	0.8	1.25	1.5	19.7	840
12 CORES							
12x1.5	7/0.53	0.6	0.8	1.25	1.5	19.4	820
12x2.5	7/0.67	0.7	0.8	1.25	1.6	22.4	1020
12x4	7/0.85	0.7	1	1.6	1.6	25.7	1390
19 CORES							
19x1.5	7/0.53	0.6	0.8	1.25	1.6	22.2	1080
19x2.5	7/0.67	0.7	1	1.6	1.7	26.6	1530
19x4	7/0.85	0.7	1	1.6	1.7	29.3	1850
27 CORES							
27x1.5	7/0.53	0.6	1	1.6	1.7	26.7	1550
27x2.5	7/0.67	0.7	1	1.6	1.8	30.7	1960
27x4	7/0.85	0.7	1	1.6	1.9	34.4	2350
37 CORES							
37x1.5	7/0.53	0.6	1	1.6	1.7	29	1850
37x2.5	7/0.67	0.7	1	1.6	1.8	33.8	2450
37x4	7/0.85	0.7	1.2	2	2	39.2	2800
48 CORES							
48x1.5	7/0.53	0.6	1	1.6	1.8	32.7	2250

No. of Core X Cross Section	No./Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Bedding Thickness	Nominal Steel Wire Armor Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Aprrox. Weight
No./mm²	No./mm	mm	mm	mm	mm	mm	kg/km
48x2.5	7/0.67	0.7	1.2	2	2	39.3	3260
48x4	7/0.85	0.7	1.2	2	2.1	44.1	3250

ELECTRICAL PROPERTIES
Conductor Operating Temperature : 90°C
Ambient Temperature : 30°C
Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated horizontal cable trayor Reference Method 13 [free air])		In single-way ducts		Laid direct in ground	
	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.
1	2	3	4	5	6	7	8	9
mm^2	A	A	A	A	A	A	A	A
1.5	27	23	29	25	-	23	-	28
2.5	36	31	39	33	-	30	-	36
4	49	42	52	44	-	40	-	48
6	62	53	66	56	-	50	-	60
10	85	73	90	78	-	65	-	80
16	110	94	115	99	115	94	140	115
25	146	124	152	131	145	125	180	150
35	180	154	188	162	175	150	215	180
50	219	187	228	197	210	175	255	215
70	279	238	291	251	260	215	315	265
95	338	289	354	304	310	260	380	315
120	392	335	410	353	355	300	430	360
150	451	386	472	406	400	335	480	405
185	515	441	539	463	455	380	540	460
240	607	520	636	546	520	440	630	530
300	698	599	732	628	590	495	700	590
400	787	673	847	728	660	560	790	670

Voltage Drop (Per Amp Per Meter)

Conductor cross-sectional area	2-core cable d.c.	2 cables, single-phase a.c.			3 or 4 cables, 3-phase a.c.			2 cables, single-phase a.c.	3 or 4 cables, 3-phase a.c.
								In ducts or in ground	In ducts or in ground
1	2	3			4			5	6
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m	mV/A/m
1.5	31.0	31.0			27.0			31.0	25.0
2.5	19.0	19.0			16.0			19.0	15.0
4	12.0	12.0			10.0			12.0	9.7
6	7.9	7.9			6.8			7.9	6.5
10	4.7	4.7			4.0			4.7	3.9
16	2.9	2.9			2.5			2.9	2.6
		r	x	z	r	x	z		
25	1.850	1.350	0.160	1.900	1.600	0.140	1.650	1.900	1.600
35	1.350	1.350	0.155	1.350	1.150	0.135	1.150	1.350	1.200
50	0.980	0.990	0.155	1.000	0.860	0.135	0.870	1.000	0.870
70	0.670	0.670	0.150	0.690	0.590	0.130	0.600	0.690	0.610
95	0.490	0.500	0.150	0.520	0.430	0.130	0.450	0.520	0.450
120	0.390	0.400	0.145	0.420	0.340	0.130	0.370	0.420	0.360
150	0.310	0.320	0.145	0.350	0.280	0.125	0.300	0.350	0.300
185	0.250	0.260	0.145	0.290	0.220	0.125	0.260	0.290	0.250
240	0.195	0.200	0.140	0.240	0.175	0.125	0.210	0.240	0.210
300	0.155	0.160	0.140	0.210	0.140	0.120	0.185	0.210	0.190
400	0.120	0.130	0.140	0.190	0.115	0.120	0.165	0.190	0.180

Rated Voltage

Standard


Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1


Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24
EN50266-2-4


Low Toxicity
NES 02-713/NF C 20-454

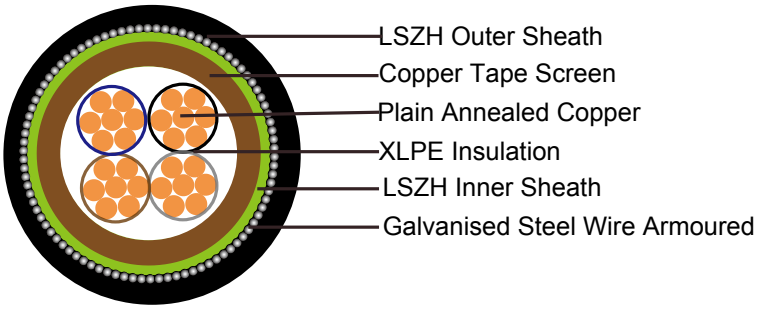

Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074


Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

Halogen Free
IEC60754-1
EN50267-2-1

600/1000V XLPE Insulated, LSZH Sheathed, Screened Power Cables (4 Cores)

FTX400 1RCZ1MZ1-R (CU/XLPE/CUTO/LSZH/SWA/LSZH 600/1000V Class 2)



APPLICATION

This cables are designed specifi cally to suit the broad spectrum of requirements of Variable Speed Drives and also include features for reducing the transmission of electromagnetic interference.

This range of screened cables drastically reduce interferences from electrical noise, especially in Variable Speed Drive (VSD) applications and are manufactured with fixed conductors.

With shield conductivity of 1/10th of phase conductor conductivity, this range of VSD cables effectively restrain radiated and conducted radio-frequency emissions.

STANDARDS

Basic design adapted to IEC 60502-1

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC 60228 class 2.
Insulation: Extruded cross-linked XLPE compound.
Screen: Copper Tape
Inner sheath: LSZH Compound
Armouring: Galvanised Steel Wire
Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 12 x Overall Diameter

ELECTRICAL PROPERTIES

Dielectric test:	3500 V r.m.s. x 5' (core/core);
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

Conductor		FTX400 1RCZ1MZ1-R						
No. of Core X Cross Section	No./ Nominal Diameter of Strands	Nominal Insulation Thickness	Nominal Sheath Thickness	Diameter Under Screen	Diameter Over Inner Sheath	Armour Wire Diameter	Nominal Overall Diameter	Approx. Weight
mm^2	No./mm	mm	mm	mm	mm	mm	mm	kg/km
4x1.5	7/0.53	0.7	1.8	9.7	12.1	13.9	17.7	640
4x2.5	7/0.67	0.7	1.8	10.7	13.1	14.9	18.7	730
4x4	7/0.85	0.7	1.8	12.0	14.4	16.2	20.0	870
4x6	7/1.04	0.7	1.8	13.4	15.8	18.3	22.1	1180
4x10	7/1.35	0.7	1.8	15.6	18.0	20.5	24.3	1490
4x16	7/1.70	0.7	1.8	18.1	20.5	23.7	27.5	2070
4x25	7/2.14	0.9	1.8	22.3	24.1	27.3	31.1	2790
4x35(S)	7/2.52	0.9	1.8	25.0	26.8	30.0	33.8	2940
4x50(S)	19/1.78	1.0	2.0	27.8	29.6	32.8	37.0	3500
4x70(S)	19/2.14	1.1	2.2	31.6	33.4	37.4	42.0	5000
4x95(S)	19/2.52	1.1	2.3	35.4	37.2	41.2	46.0	6300
4x120(S)	37/2.03	1.2	2.5	39.0	40.8	45.8	51.0	8200
4x150(S)	37/2.25	1.4	2.6	42.0	43.8	48.8	54.2	9600
4x185(S)	37/2.52	1.6	2.8	47.8	49.6	54.6	60.4	11500
4x240(S)	61/2.25	1.7	3.0	54.0	55.8	60.8	67.0	14400
4x300(S)	61/2.52	1.8	3.0	58.0	59.8	64.8	71.4	17200

(S) : Sectoral Stranded Conductors.

ELECTRICAL PROPERTIES

Conductor Operating Temperature : 90°C
Ambient Temperature : 30°C

Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated horizontal cable trayor Reference Method 13 [free air])		In single-way ducts		Laid direct in ground	
	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.
1	2	3	4	5	6	7	8	9
mm^2	A	A	A	A	A	A	A	A
1.5	27	23	29	25	-	23	-	28
2.5	36	31	39	33	-	30	-	36
4	49	42	52	44	-	40	-	48
6	62	53	66	56	-	50	-	60
10	85	73	90	78	-	65	-	80
16	110	94	115	99	115	94	140	115
25	146	124	152	131	145	125	180	150
35	180	154	188	162	175	150	215	180
50	219	187	228	197	210	175	255	215
70	279	238	291	251	260	215	315	265
95	338	289	354	304	310	260	380	315
120	392	335	410	353	355	300	430	360
150	451	386	472	406	400	335	480	405
185	515	441	539	463	455	380	540	460
240	607	520	636	546	520	440	630	530
300	698	599	732	628	590	495	700	590

Voltage Drop (Per Amp Per Meter)

Conductor cross-sectional area	2-core cable d.c.	2 cables, single-phase a.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c.	3 or 4 cables, 3-phase a.c.
				In ducts or in ground	In ducts or in ground
1	2	3	4	5	6
mm^2	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m
1.5	31.0	31.0	27.0	31.0	25.0
2.5	19.0	19.0	16.0	19.0	15.0
4	12.0	12.0	10.0	12.0	9.7
6	7.9	7.9	6.8	7.9	6.5

10	4.7	4.7			4.0			4.7	3.9
16	2.9	2.9			2.5			2.9	2.6
		r	x	z	r	x	z		
25	1.850	1.350	0.160	1.900	1.600	0.140	1.650	1.900	1.600
35	1.350	1.350	0.155	1.350	1.150	0.135	1.150	1.350	1.200
50	0.980	0.990	0.155	1.000	0.860	0.135	0.870	1.000	0.870
70	0.670	0.670	0.150	0.690	0.590	0.130	0.600	0.690	0.610
95	0.490	0.500	0.150	0.520	0.430	0.130	0.450	0.520	0.450
120	0.390	0.400	0.145	0.420	0.340	0.130	0.370	0.420	0.360
150	0.310	0.320	0.145	0.350	0.280	0.125	0.300	0.350	0.300
185	0.250	0.260	0.145	0.290	0.220	0.125	0.260	0.290	0.250
240	0.195	0.200	0.140	0.240	0.175	0.125	0.210	0.240	0.210
300	0.155	0.160	0.140	0.210	0.140	0.120	0.185	0.210	0.190

Note :
r = conductor resistance at operating temperature
x = reactance
z = impedance

Rated Voltage

Standard

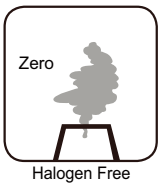

Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1


Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24
EN50266-2-4


Low Toxicity
NES 02-713/NF C 20-454


Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074

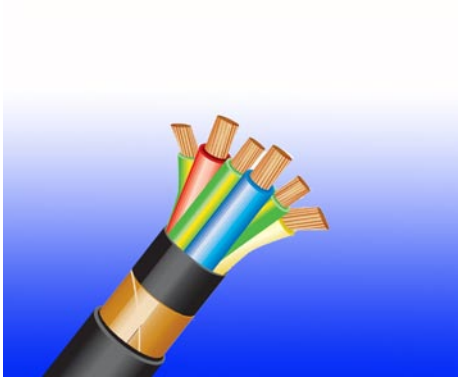

Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

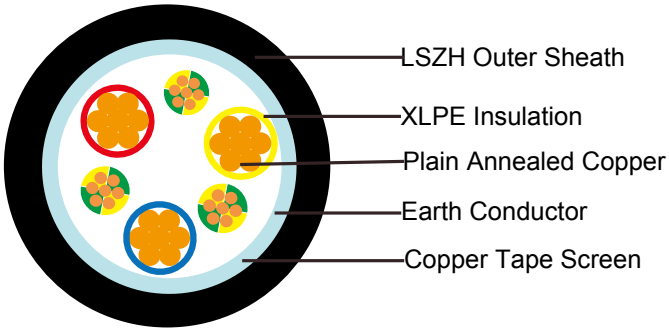


Halogen Free
IEC60754-1
EN50267-2-1

600/1000V XLPE Insulated, LSZH Sheathed, Screened Power Cables (3C+3E)

FTX300 1RCZ1-R (CU/XLPE/CUTO/LSZH 600/1000V Class 2)





APPLICATION

The cables are designed specifically to suit the broad spectrum of requirements of Variable Speed Drives and also include features for reducing the transmission of electromagnetic interference. These range of cables are able to reduce capacitance of power conductors and have an electrically balanced construction which includes split earths and a copper screen.

This range of screened cables drastically reduce interferences from electrical noise, especially in Variable Speed Drive (VSD) applications and are manufactured with fixed conductors.

With shield conductivity of 1/10th of phase conductor conductivity, this range of VSD cables effectively restrain radiated and conducted radio-frequency emissions.

STANDARDS

Basic design adapted to IEC 60502-1

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, stranded according to IEC 60228 class 2.
Insulation: Extruded cross-linked XLPE compound.
Screen: Copper Tape
Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

COLOUR CODE

Insulation Colour: Red, Yellow, Blue, Green/Yellow (x3 Earth Conductors)
Outer sheath: Black or as order

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 10 x Overall Diameter

ELECTRICAL PROPERTIES

Dielectric test:	3500 V r.m.s. x 5' (core/core)
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

Conductor			FTX300 1RCZ1-R			
No. of Core X Cross Section	No./Nominal Diameter of Strands	Combined Earth Size	Nominal Insulation Thickness	Nominal Sheath Thickness	Nominal Overall Diameter	Approx. Weight
mm^2	No./mm	mm^2	mm	mm	mm	kg/km
3x1.5	7/0.53	4.5(3x1.5)	0.7	1.8	13.6	325
3x2.5	7/0.67	4.5(3x1.5)	0.7	1.8	14.8	380
3x4	7/0.85	4.5(3x1.5)	0.7	1.8	15.8	440
3x6	7/1.04	7.5(3x2.5)	0.7	1.8	16.9	550
3x10	7/1.35	12(3x4)	0.7	1.8	18.6	750
3x16	7/1.70	18(3x6)	0.7	1.8	20.8	1000
3x25	7/2.14	30(3x10)	0.9	1.8	24.0	1470
3x35	7/2.52	30(3x10)	0.9	1.8	25.6	1890
3x50	19/1.78	30(3x10)	1.0	1.9	31.1	2300
3x70	19/2.14	48(3x16)	1.1	2.0	34.6	3200

3x95	19/2.52	48(3x16)	1.1	2.2	39.3	4200
3x120	37/2.03	75(3x25)	1.2	2.3	44.0	5400
3x150	37/2.25	75(3x25)	1.4	2.5	49.0	6400
3x185	37/2.52	105(3x35)	1.6	2.6	54.0	7900
3x240	61/2.25	150(3x50)	1.7	2.8	61.0	10200
3x300	61/2.52	150(3x50)	1.8	3.0	67.0	12300

ELECTRICAL PROPERTIES

Conductor Operating Temperature : 90°C
Ambient Temperature : 30°C
Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 4 (enclosed in conduit in thermally insulating wall etc)		Reference Method 3 (enclosed in conduit on a wall or in trunking etc)		Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated cable tray, horizontal or vertical)		Reference Method 12 (free air)		
									Horizontal flat spaced	Vertical flat spaced	Trefoil
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, 3-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or flat and touching	3 or 4 cables, 3-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. or 3 c ables three phase	2 cables, single-phase a.c. or d.c. or 3 cables three phase	3 cables, trefoil 3-phase a.c.
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.5	18	17	22	19	25	23	-	-	-	-	-
2.5	24	23	30	26	34	31	-	-	-	-	-
4	33	30	40	35	46	41	-	-	-	-	-
6	43	39	51	45	59	54	-	-	-	-	-
10	58	53	71	63	81	74	-	-	-	-	-
16	76	70	95	85	109	99	-	-	-	-	-
25	100	91	126	111	143	130	158	140	183	163	138
35	125	111	156	138	176	161	195	176	226	203	171
50	149	135	189	168	228	209	293	215	274	246	209
70	189	170	240	214	293	268	308	279	351	318	270
95	228	205	290	259	355	326	375	341	426	389	330
120	263	235	336	299	413	379	436	398	495	453	385
150	300	270	375	328	476	436	505	461	570	524	445
185	341	306	426	370	545	500	579	530	651	600	511
240	400	358	500	433	644	590	686	630	769	711	606

300	459	410	573	493	743	681	794	730	886	824	701

Voltage Drop (Per Amp Per Meter)

Size of conductor	2 cables d.c.	2 cables, single-phase a.c.						3 or 4 cables, 3-phase a.c.								
		Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)			Ref. Methods 1 and 11 (clipped direct or on trays touching)			Ref. Methods 3 and 4 (enclosed in conduit etc, in or on a wall)			Ref. Methods 1, 11 and 12 (in trefoil)			Ref. Methods 1 and 11 (Flat and touching)		
1	2	3			4			5			6			7		
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
1.5	31	31			27			27			27			27		
2.5	19	19			16			16			16			16		
4	33	12			10			10			10			10		
6	7.8	7.9			6.8			6.8			6.8			6.8		
10	4.7	4.7			4.7			4			4			4		
16	2.9	2.9			2.9			2.5			2.5			2.5		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.85	1.85	0.31	1.90	1.85	0.190	1.85	1.60	0.27	1.65	1.600	0.165	1.600	1.600	0.190	1.600
35	1.35	1.35	0.29	1.35	1.35	0.180	1.35	1.15	0.25	1.15	1.150	0.155	1.50	1.150	0.180	1.150
50	0.99	1.00	0.29	1.05	0.99	0.180	1.00	0.87	0.25	0.90	0.860	0.155	0.870	0.860	0.180	0.870
70	0.68	0.70	0.28	0.75	0.68	0.175	0.71	0.60	0.24	0.65	0.590	0.150	0.610	0.590	0.175	0.620
95	0.49	0.51	0.27	0.58	0.49	0.170	0.52	0.44	0.23	0.50	0.430	0.145	0.450	0.430	0.170	0.460
120	0.39	0.41	0.26	0.48	0.39	0.165	0.43	0.35	0.23	0.42	0.340	0.140	0.370	0.340	0.165	0.380
150	0.32	0.33	0.26	0.43	0.32	0.165	0.36	0.29	0.23	0.37	0.280	0.140	0.310	0.280	0.165	0.320
185	0.25	0.27	0.26	0.37	0.26	0.165	0.30	0.23	0.23	0.32	0.220	0.140	0.260	0.220	0.165	0.280
240	0.19	0.21	0.26	0.33	0.20	0.160	0.25	0.185	0.22	0.29	0.170	0.140	0.220	0.170	0.165	0.240
300	0.155	0.175	0.25	0.31	0.16	0.160	0.22	0.150	0.22	0.27	0.140	0.140	0.195	0.135	0.160	0.210

Note : r = conductor resistance at operating temperature; x = reactance; z = impedance

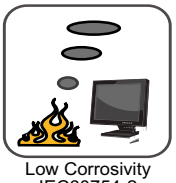
Rated Voltage

Standard


Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1


Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24
EN50266-2-4


Low Toxicity
NES 02-713/NF C 20-454

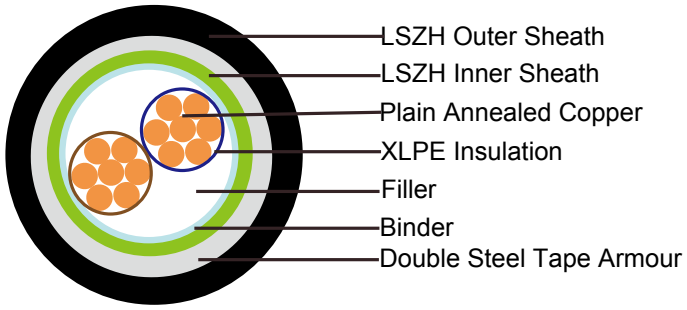

Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074


Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

Halogen Free
IEC60754-1
EN50267-2-1

600/1000V XLPE Insulated, LSZH Sheathed, Double Steel Tape Armoured Power Cables (2 Cores)

FTX400 1RZ1MZ1-R (CU/XLPE/LSZH/DSTA/LSZH 600/1000V Class 2)



APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design adapted to IEC 60502 -1

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, normal stranded or compact stranded according to IEC 60228 class 2.
Insulation: Extruded cross-linked XLPE compound.
Inner Sheath: LSZH compound.
Armouring: Double steel tape
Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 10 x Overall Diameter

ELECTRICAL PROPERTIES

Dielectric test:	3500 V r.m.s. x 5’ (core/core);
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

Conductor			FTX400 1RZ1MZ1-R					
No. of Core X Cross Section	No./Nominal Diameter of Strands	Diameter Overall Conducrtor	Nominal Insulation Thickness	Steel Tape Thickness	Nominal Sheath Thickness	Nominal Overall Diatemer	Max.DC resistance of conductor @20°C	Approx. Weight
mm^2	No/mm	mm	mm	mm	mm	mm	Ω/km	Kg/km
2x6	7/1.04	2.90	0.7	0.2	1.8	16.8	3.08	417
2x10	7/1.35	3.75	0.7	0.2	1.8	18.5	1.83	539
2x16	7/1.70	4.75	0.7	0.2	1.8	20.5	1.15	704
2x25	7/2.14	5.85	0.9	0.2	1.8	23.5	0.727	971
2x35	7/2.52	6.90	0.9	0.2	1.8	25.6	0.524	1,216
2x50	19/1.78	8.15	1.0	0.2	1.8	28.5	0.387	1,582
2x70	19/2.14	9.75	1.1	0.2	1.9	32.3	0.268	2081
2x95	19/2.52	11.45	1.1	0.2	2.0	36.4	0.193	2749
2x120	37/2.03	12.85	1.2	0.5	2.2	41.1	0.153	3,727
2x150	37/2.25	14.30	1.4	0.5	2.3	45.1	0.124	4,509
2x185	37/2.52	15.95	1.6	0.5	2.5	49.9	0.0991	5,523
2x240	61/2.25	18.25	1.7	0.5	2.6	55.3	0.0754	6981
2x300	61/2.52	20.40	1.8	0.5	2.8	60.7	0.0601	8,383
2x400	61/2.85	23.35	2.0	0.5	3.0	67.9	0.0470	10,897

ELECTRICAL PROPERTIES

Conductor Operating Temperature : 90°C
Ambient Temperature : 30°C

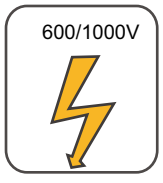
Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated horizontal cable trayor Reference Method 13 [free air])		In single-way ducts		Laid direct in ground	
	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.
1	2	3	4	5	6	7	8	9
mm^2	A	A	A	A	A	A	A	A
6	62	53	66	56	-	50	-	60
10	85	73	90	78	-	65	-	80
16	110	94	115	99	115	94	140	115
25	146	124	152	131	145	125	180	150
35	180	154	188	162	175	150	215	180
50	219	187	228	197	210	175	255	215
70	279	238	291	251	260	215	315	265
95	338	289	354	304	310	260	380	315
120	392	335	410	353	355	300	430	360
150	451	386	472	406	400	335	480	405
185	515	441	539	463	455	380	540	460
240	607	520	636	546	520	440	630	530
300	698	599	732	628	590	495	700	590
400	787	673	847	728	660	560	790	670

Voltage Drop (Per Amp Per Meter)

Conductor cross-sectional area	2-core cable d.c.	2 cables, single-phase a.c.			3 or 4 cables, 3-phase a.c.			2 cables, single-phase a.c.	3 or 4 cables, 3-phase a.c.
								In ducts or in ground	In ducts or in ground
1	2	3			4			5	6
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m	mV/A/m
6	7.9	7.9			6.8			7.9	6.5
10	4.7	4.7			4.0			4.7	3.9
16	2.9	2.9			2.5			2.9	2.6
		r	x	z	r	x	z		
25	1.850	1.350	0.160	1.900	1.600	0.140	1.650	1.900	1.600
35	1.350	1.350	0.155	1.350	1.150	0.135	1.150	1.350	1.200
50	0.980	0.990	0.155	1.000	0.860	0.135	0.870	1.000	0.870
70	0.670	0.670	0.150	0.690	0.590	0.130	0.600	0.690	0.610
95	0.490	0.500	0.150	0.520	0.430	0.130	0.450	0.520	0.450
120	0.390	0.400	0.145	0.420	0.340	0.130	0.370	0.420	0.360
150	0.310	0.320	0.145	0.350	0.280	0.125	0.300	0.350	0.300
185	0.250	0.260	0.145	0.290	0.220	0.125	0.260	0.290	0.250
240	0.195	0.200	0.140	0.240	0.175	0.125	0.210	0.240	0.210
300	0.155	0.160	0.140	0.210	0.140	0.120	0.185	0.210	0.190
400	0.120	0.130	0.140	0.190	0.115	0.120	0.165	0.190	0.180

Note :
r = conductor resistance at operating temperature
x = reactance
z = impedance



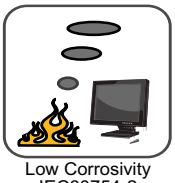
Rated Voltage

Standard


Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1


Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24
EN50266-2-4


Low Toxicity
NES 02-713/NF C 20-454

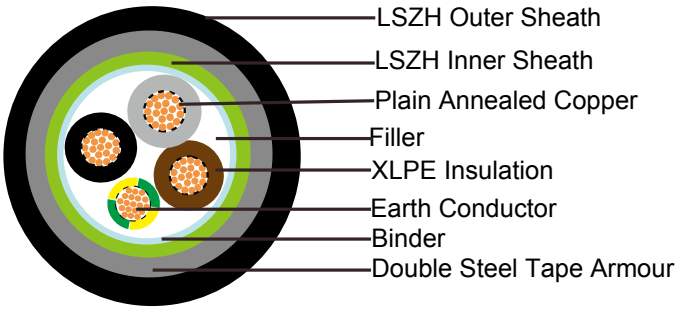

Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074


Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

Halogen Free
IEC60754-1
EN50267-2-1

600/1000V XLPE Insulated, LSZH Sheathed, Double Steel Tape Armoured Power Cables (3C+E)

FTX400 1RZ1MZ1-R (CU/XLPE/LSZH/DSTA/LSZH 600/1000V Class 2)



APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design adapted to IEC 60502-1

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk * denotes superseded standard.

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Plain annealed copper wire, normal stranded or compact stranded according to IEC 60228 class 2.
Insulation: Extruded cross-linked XLPE compound.
Inner Sheath: LSZH compound.
Armouring: Double steel tape
Outer Sheath: Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

COLOUR CODE

Insulation Colour as per BS7671

	With Earth Conductor	Without Earth Conductor
2Cores	-	Brown, Blue
3Cores	Yellow/Green, Brown, Blue	Brown, Gray, Black
4Cores	Yellow/Green, Brown, Gray, Black	Brown, Gray, Black, Blue
5Cores	Yellow/Green, Brown, Gray, Black, Blue	Brown, Gray, Black, Blue, Black
Above 5 Cores	Yellow/Green, Black Numbered	Black Numbered

Sheath Colour: Black (other colors upon request)

PHYSICAL AND THERMAL PROPERTIES

Temperature Range During Operation: -30°C – +90°C
Temperature Range During Installation: -5°C – +50°C
Minimum Bending Radius: 10 x Overall Diameter

ELECTRICAL PROPERTIES

Dielectric test:	3500 V r.m.s. x 5' (core/core)
Insulation resistance	≥1000 MΩ x km (at 20°C)
Short circuit temperature	250°C

CONSTRUCTION PARAMETERS

Conductor					FTX400 1RZ1MZ1-R					
No. of Core X Cross Section / CPC Cross Section	Phases	Neutral	Nominal Diameter Overall Conducrtor		Nominal Insulation Thickness		Nominal Steel Tape Thickness	Nominal Sheath Thickness	Nominal Overall Diatemer	Approx. Weight
	No./ Nominal Diameter of Strands	No./ Nominal Diameter of Strands	Pha.	Neu.	Pha.	Neu.				
mm^2	No/mm	No/mm	mm	mm	mm	mm	mm	mm	mm	Kg/km
3x10/6	7/1.35	7/1.04	3.75	2.90	0.7	0.7	0.2	1.8	20.1	740

3x16/10	7/1.70	7/1.35	4.75	3.75	0.7	0.7	0.2	1.8	22.5	1,004
3x25/16	7/2.14	7/1.70	5.85	4.75	0.9	0.7	0.2	1.8	25.8	1,421
3x35/16	7/2.52	7/1.70	6.90	4.75	0.9	0.7	0.2	1.8	27.7	1,745
3x35/25	7/2.52	7/2.14	6.90	5.85	0.9	0.9	0.2	1.8	28.6	1,864
3x50/25	19/1.78	7/2.14	8.15	5.85	1.0	0.9	0.2	1.8	31.3	2,358
3x50/35	19/1.78	7/2.52	8.15	6.90	1.0	0.9	0.2	1.9	32.0	2.72
3x70/35	19/2.14	7/2.52	9.75	6.90	1.1	0.9	0.2	2.0	35.9	3166
3x70/50	19/2.14	19/1.78	9.75	8.15	1.1	1.0	0.2	2.0	36.8	3.341
3x95/50	19/2.52	19/1.78	11.4	8.15	1.1	1.0	0.5	2.1	41.4	4,611
3x120/70	37/2.03	19/2.14	12.8	9.75	1.2	1.1	0.5	2.3	45.6	5682
3x150/95	37/2.25	19/2.52	14.3	11.4	1.4	1.1	0.5	2.4	50.8	7,072
3x150/120	37/2.25	37/2.03	14.3	12.8	1.4	1.2	0.5	2.5	51.8	7,357
3x185/95	37/2.52	19/2.52	15.9	11.4	1.6	1.1	0.5	2.6	54.7	8,348
3x185/120	37/2.52	37/2.03	15.9	12.8	1.6	1.2	0.5	2.6	55.8	8638
3x240/120	61/2.25	37/2.03	18.2	12.8	1.7	1.2	0.5	2.7	61.0	10,660
3x240/150	61/2.25	37/2.25	18.2	14.3	1.7	1.4	0.5	2.8	62.2	11024
3x300/150	61/2.52	37/2.25	20.4	14.3	1.8	1.4	0.5	2.9	66.8	12,809
3x300/185	61/2.52	37/2.52	20.4	15.9	1.8	1.6	0.5	3.0	68.1	13,256

ELECTRICAL PROPERTIES

No. of Core X Cross Section / CPC Cross Section	Conductor				Max.DC resistance of conductor @20°C	
	Phases	Neutral	Dia.Overall Conducrtor			
	No./Nominal Diameter of Strands	No./Nominal Diameter of Strands	Pha.	Neu.	Pha.	Neu.
mm^2	No/mm	No/mm	mm	mm	Ω/km	Ω/km
3x10/6	7/1.35	7/1.04	3.75	2.90	1.83	3.08
3x16/10	7/1.70	7/1.35	4.75	3.75	1.15	1.83
3x25/16	7/2.14	7/1.70	5.85	4.75	0.727	1.15
3x35/16	7/2.52	7/1.70	6.90	4.75	0.524	1.15
3x35/25	7/2.52	7/2.14	6.90	5.85	0.524	0.727
3x50/25	19/1.78	7/2.14	8.15	5.85	0.387	0.727
3x50/35	19/1.78	7/2.52	8.15	6.90	0.387	0.524
3x70/35	19/2.14	7/2.52	9.75	6.90	0268	0.524
3x70/50	19/2.14	19/1.78	9.75	8.15	0268	0.387
3x95/50	19/2.52	19/1.78	11.4	8.15	0.193	0.387
3x120/70	37/2.03	19/2.14	12.8	9.75	0.153	0.268
3x150/95	37/2.25	19/2.52	14.3	11.4	0.124	0.193
3x150/120	37/2.25	37/2.03	14.3	12.8	0.124	0.153

3x185/95	37/2.52	19/2.52	15.9	11.4	0.0991	0.193
3x185/120	37/2.52	37/2.03	15.9	12.8	0.0991	0.153
3x240/120	61/2.25	37/2.03	18.2	12.8	0.0754	0.153
3x240/150	61/2.25	37/2.25	18.2	14.3	0.0754	0.124
3x300/150	61/2.52	37/2.25	20.4	14.3	0.0601	0.124
3x300/185	61/2.52	37/2.52	20.4	15.9	0.0601	0.0991

ELECTRICAL PROPERTIES

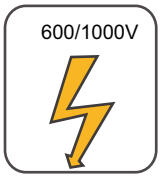
Conductor Operating Temperature : 90°C
Ambient Temperature : 30°C
Current-Carrying Capacities (Amp)

Conductor cross-sectional area	Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated horizontal cable trayor Reference Method 13 [free air])		In single-way ducts		Laid direct in ground	
	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.	one 2-core cable single phase a.c. or d.c.	one 3-core or 4-core cable 3-phase a.c.
1	2	3	4	5	6	7	8	9
mm^2	A	A	A	A	A	A	A	A
10	85	73	90	78	-	65	-	80
16	110	94	115	99	115	94	140	115
25	146	124	152	131	145	125	180	150
35	180	154	188	162	175	150	215	180
50	219	187	228	197	210	175	255	215
70	279	238	291	251	260	215	315	265
95	338	289	354	304	310	260	380	315
120	392	335	410	353	355	300	430	360
150	451	386	472	406	400	335	480	405
185	515	441	539	463	455	380	540	460
240	607	520	636	546	520	440	630	530
300	698	599	732	628	590	495	700	590

Voltage Drop (Per Amp Per Meter)

Conductor cross-sectional area	2-core cable d.c.	2 cables, single-phase a.c.			3 or 4 cables, 3-phase a.c.			2 cables, single-phase a.c.	3 or 4 cables, 3-phase a.c.
								In ducts or in ground	In ducts or in ground
1	2	3			4			5	6
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m	mV/A/m
6	7.9	7.9			6.8			7.9	6.5
10	4.7	4.7			4.0			4.7	3.9
16	2.9	2.9			2.5			2.9	2.6
		r	x	z	r	x	z		
25	1.850	1.350	0.160	1.900	1.600	0.140	1.650	1.900	1.600
35	1.350	1.350	0.155	1.350	1.150	0.135	1.150	1.350	1.200
50	0.980	0.990	0.155	1.000	0.860	0.135	0.870	1.000	0.870
70	0.670	0.670	0.150	0.690	0.590	0.130	0.600	0.690	0.610
95	0.490	0.500	0.150	0.520	0.430	0.130	0.450	0.520	0.450
120	0.390	0.400	0.145	0.420	0.340	0.130	0.370	0.420	0.360
150	0.310	0.320	0.145	0.350	0.280	0.125	0.300	0.350	0.300
185	0.250	0.260	0.145	0.290	0.220	0.125	0.260	0.290	0.250
240	0.195	0.200	0.140	0.240	0.175	0.125	0.210	0.240	0.210
300	0.155	0.160	0.140	0.210	0.140	0.120	0.185	0.210	0.190
400	0.120	0.130	0.140	0.190	0.115	0.120	0.165	0.190	0.180

Note :
r = conductor resistance at operating temperature
x = reactance
z = impedance



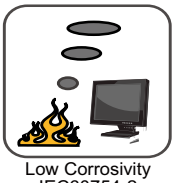
Rated Voltage

Standard


Flame Retardancy
NF C32-070-2.1(C2)
IEC60332-1-2/EN50265-2-1


Reduced Fire Propagation
NF C32-070-2.2(C1)
IEC60332-3-24
EN50266-2-4


Low Toxicity
NES 02-713/NF C 20-454


Low Corrosivity
IEC60754-2
EN50267-2-2/3
NF C 32-074


Low Smoke Emission
IEC 61034-1&2
EN 50268-1&2/NF C32-073

Halogen Free
IEC60754-1
EN50267-2-1

TYPE CODES FOR LSZH FIRE RETARDANT POWER CABLES

FTX A-B-C-D-E-F

F Conductor
U: Solid to IEC 60228 class 1
R: Stranded to IEC 60228 class 2
F: Stranded to IEC 60228 class 5

E Sheath
Z1: Thermoplastic LSZH

D Screen
O: Overall aluminium tape screen
C: Overall copper tape screen

C Insulation
R: XLPE
Z1: Thermoplastic LSZH

B Voltage
05: 300/500V
07: 450/750V
1: 600/1000V

A Type
100: Single core unsheathed
200: 300/500V & 450/750V multicore
300: Single core sheathed
400: 600/1000V multicore

Technical Information

FLAME RETARDANCE IN ACCORDANCE WITH DIFFERENT STANDARDS

The following standards specify a method for flame propagation test for single core cables. The single cable sample undergoes the flame action of a bunsen burner. The test only lasts few minutes.

The IEC 60332-1 standards are taken over as EN standards and transferred to national standards Example: IEC 60332-1 becomes EN 60332-1 and introduced in Germany as DIN EN 60332-1.

Flame Retardance in accordance with EN 60332:2004

EN 60332:2004 Tests on electrical and optical cables under fire conditions. The standard applies to single insulated wires (cables) and requires a vertical flame test with a maximum flame climb of 450mm. The test lasts between 1 and 8 minutes, depending on the cable diameter.

EN 60332-1-1:2004 / BS EN 60332-1-1:2004 / IEC 60332-1-1:2004 / DIN EN 60332-1-1:2004 / VDE 0482-1-1:2005-06 Test on electrical and optical cables under fire conditions. Test for a vertical flame propagation fo a single insulated wire or cables.

EN 60332-1-2:2004 / BS EN 60332-1-2:2004 / IEC 60332-1-2:2004 / DIN EN 60332-1-2:2004 / VDE 0482-1-2:2005-06 / CEI 60332-1-2(CEI 20-35/1-2) Tests on electrical and optical fiber cables under fire conditions. Test for a vertical flame propagation for a single insulated wire or cable – Procedure for 1kW premixed flame.

This standard specifies a method of test for resistance to vertical flame propagation for a single insulated wire or cable. Part 1-1 specifies the test apparatus and Part 1-2 specifies the test procedure.

The cable sample is deemed to pass the test if the distance between the lower edge of the top support and the onset of charring is greater than 50mm. In addition, a failure shall be recorded if burning extends downward to a point greater than 540mm from the lower edge of the top support.

EN 60332-1-2:2004 specifies the use of 1kW premix flame and is for general use, except that the procedure may not be suitable for the testing of small insulated conductors or cables of less than 0.5mm sq cross section because the conductor melts before the test is completed, or for the testing of small optic fiber cables because the fiber will be broken before the test is completed. In this case, the procedure given by EN 60332-2-1/2 is recommended.

EN 60332-2-1:2004 / BS EN 60332-2-1:2004 / IEC 60332-2-1:2004 / DIN EN 60332-2-1:2004 / VDE 0482-2-1:2005-06 Tests on electrical and optical cables under fire conditions. Test for a vertical flame propagation for a single small insulated wire or cable.

EN 60332-2-2:2004 / BS EN 60332-2-2:2004 / IEC60332-2-2:2004 / DIN EN 60332-2-2:2004 / VDE 0482-2-2:2005-06 / CEI 60332-2-2 (CEI 20-35/2-2) Test on electric and optical fiber cables under fire conditions. Tests for vertical flame propagation for a single small insulated wire or cable. Procedure for diffusion flame.
This test applies to small dimensions cables.
This standard specifies a method of test for resistance to vertical flame propagation for a single insulated wire or cable. Part 2-1 specifies the test apparatus and Part 2-2 specifies the test

procedure.

Flame Retardance in accordance with NF C32-070-2.1(C2)

NF C32-070:2001 Insulated conductors and cables for installation - Classification tests on conductors and cables with regard to fire behavior.
NF C32-070 2.1 Procedure for 1 kW pre-mixed flame.

The NF F 32070 2.1 (Category C2) and IEC 60332-1-2 are very similar. The sole difference is the time during which the flame is applied.

Flame Retardance in accordance with EN 50265-1:1999 (replaced by EN 60332)

EN 50265-1:1999 / BS EN 50265-1:1999 / DIN EN 50265-1:1999 / VDE 0482-265-1:1999-04– Common test methods for cables under fire conditions. Test for resistance to a vertical flame propagation for a single insulated conductor or cable. Apparatus (Replaced by EN 60332-1-1:2004 and EN 60332-2-1:2004).
EN 50265-2-1:1999 / BS EN 50265-2-1:1999 / DIN EN 50265-2-1:1999 / VDE 0482-265-2-1:1999-04 – Common test methods for cables under fire conditions. Test for resistance to a vertical flame propagation for a single insulated conductor or cable. Part 2-1: Procedure 1kW pre-mixed flame (Replaced by EN 60332-1-2:2004).

EN 50265-2-2:1999 / BS EN 50265-2-2:1999 / DIN EN 50265-2-2:1999 / VDE 0482-265-2-2:1999-04 – Common test methods for cables under fire conditions. Test for resistance to a vertical flame propagation for a single insulated conductor or cable. Part 2-2: Procedure Diffusion flame (Replaced by EN 60332-2-2:2004).

Flame Retardance in accordance with BS 4066 Part 1 & 2 (replaced by EN 60332)

BS 4066-2:1980 (superseded) – Tests on electic cables under fire conditions. Method of test on a single vertical insulated wire or cable.

This standard is no longer in force and is replaced by BS EN 50265-2-1 which was also superseded by BS EN 60332-1:2009.

Flame Retardance in accordance with NBN C 30-004 (cat. F1)

NBN C 32-004 specifies a method of test for measuring the vertical flame propagation characteristics of a single wire or cable. The cable specimen is deemed to have passed the test and categorized as F1 if after burning has ceased, the charred or affected portion does not reach within 50mm of the lower edge of the top clamp which is equivalent to 425mm above the point of flame application.

Flame Retardance in accordance with IEEE 383

In the IEEE 383 test, cables are supported by a one foot wide vertical rack eight feet high. The cables are positioned in the centre six inches of the rack, spaced one-half diameter apart. The rack is centered in an eight foot enclosure. A ten inch ribbon burner ignites the cable with a 21 kW (70000 BTU). The burner is positioned 2 feet above the floor and 9 to 12 inches of cables are exposed to direct flames for 20 minutes. Cables on which flame extends above the top of the 8 foot rack fail the test.

REDUCED FIRE PROPAGATION IN ACCORDANCE WITH DIFFERENT STANDARDS

These standards specify a method for fire propagation test for vertically mounted bunched cables. These tests simulate the chimney effect in vertical installation of bunch of cables. A certain number of cable sections with a length of 3.5 m is fastened to a vertical ladder in an adapted chamber. The amount of combustible materials for cables and duration of flame application depends on the category the cable has to meet.

Resistance of the wires bundle arranged vertically to the spread of the flame should be such that after a certain time and stopping the source of ignition, flame is extinguished by itself and the length of charred fragments will not exceed 2.5 m in height measured above the lower edge of the burner.

Reduced Fire Propagation in accordance with IEC 60332-3

This test is the most common one to verify the behaviour of a cables for the fire propagation. The cables are installed on a bunch of vertical ladder inside a metal cabinet and undergo the action of a ribbon flame at 750°C.The standard is subdivided in several parts that differ one from the other for the quantity of cable to be installed, the installation mode and the flame application time.

EN 60332-3-10:2009 / BS EN 60332-3-10:2009 / IEC 60332-3-10 ed1.1 / DIN EN 60332-3-10:2009 / VDE 0482-332-3-10:2010-08 – Common test methods for cables under fire conditions. Tests on electric and optical fiber cables under fire conditions - Part 3-10: Test for vertical flame spread of vertically mounted bunched wires or cables.

EN 60332-3-21:2009 / BS EN 60332-3-21:2009 / IEC 60332-3-21 ed1.1 / DIN EN 60332-3-21 / VDE 0482-332-3-21:2010-08 / CEI EN 60332-3-21:2009 (CEI 20-22/3-1)– Procedures. Tests on electric and optical fiber cables under fire conditions - Part 3-21: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category A . F/R
-Installation In one layer (front).
-Installation In two layers (front and rear)
-The quantity of the Installed cable is equal to 7 litres/m of combustible materials for cables
-The time of application of the flame is 40 minutes

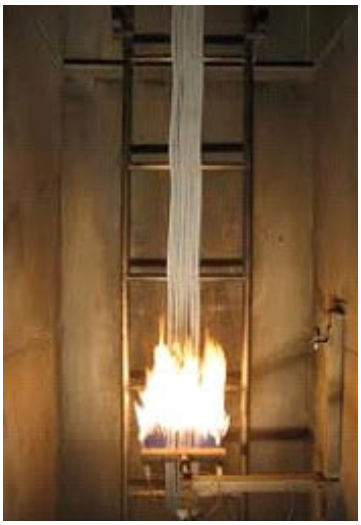
EN 60332-3-22:2009 / BS EN 60332-3-22:2009 / IEC 60332-3-22 ed1.1 / DIN EN 60332-3-22:2009 /VDE 0482-332-3-22:2010-08 / CEI EN 60332-3-22:2009 (CEI 20-22/3-2)– Procedures. Tests on electric and optical fiber cables under fire conditions - Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cable - Category A

-Installation In one layer (front).
-The quantity of the installed cable is equal to 7 litres/m of combustible materials for cables
-The time of application of the flame is 40 minutes

EN 60332-3-23:2009 / BS EN 60332-3-23:2009 / IEC 60332-3-23 ed1.1 / DIN EN 60332-3-23:2009 / VDE 0482-332-3-23:2010-08 / CEI EN 60332-3-23:2009 (CEI 20-22/3-3)– Procedures. Tests on electric and optical fiber cables under fire conditions - Part 3-23: Test for vertical flame spread of

vertically-mounted bunched wires or cables - Category B

-Installation In one layer (front).
-The quantity of the installed cable is equal to 3.5 litres/m of combustible materials for cables
-The time of application of the flame is 40 minutes



EN 60332-3-24:2009 / BS EN 60332-3-24:2009 / IEC 60332-3-24 ed1.1 / DIN EN 60332-3-24:2009 / VDE 0482-332-3-24:2010-08 / CEI EN 60332-3-24:2009 (CEI 20-22/3-4) – Procedures. Tests on electric and optical fiber cables under fire conditions - Part 3-24: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category C

-Installation In one layer (front).
-The quantity of the installed cable is equal to 1.5 litres/m of combustible materials for cables
-The time of application of the flame is 20 minutes

EN 60332-3-25:2009 / BS EN 60332-3-25:2009 / IEC 60332-3-25 ed1.1 / DIN EN 60332-3-25: 2009 / VDE 0482-332-3-25:2010-08 / CEI EN 60332-3-25:2009 (CEI 20-22/3-5)– Procedures. Tests on electric and optical fiber cables under fire conditions - Part 3-25: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category D
-Installation In one layer (front).
-The quantity of the installed cable is equal to 0.5 litres/m of combustible materials for cables
-The time of application of the flame is 20 minutes.

Summary of test condition:

IEC	60332-3-21	60332-3-22			60332-3-23		60332-3-24		60332-3-25	
BS EN 50266	50266-2-1	50266-2-2			50266-2-3		50266-2-4		50266-2-5	
CEI	20-22/3-1	20-22/3-2			20-22/3-3		20-22/3-4		20-22/3-5	
Category	AF/R	A			B		C		D	
Conductor cross-sectionsmm²	＞35	＞35	≤35		＞35	≤35	＞35	≤35	＞35	≤35
NMV(litres per metre of cable)	7	7			3.5		1.5		0.5	
Minimum length of test pieces(m)	3.5	3.5			3.5		3.5		3.5	
Standard ladder (500 mm wide): • number of layers • maximum width of test sample	1front+1rear 300mm	≥1front 300mm	1front 300mm	- -	≥1front 300mm	1front 300mm	≥1front 300mm	1front 300mm	≥1front 300mm	

Wide ladder (800 mm wide): • number of layers • maximum width of test sample	- -	- -	- -	1front 600mm	- -		- -		- -	
Positioning of test pieces	Spaced 0.5×Diameter cable (Max.20mm)	Touching	Spaced 0.5×Diameter cable (Max.20mm)		Touching	Spaced 0.5×Diameter cable (Max.20mm)	Touching	Spaced 0.5×Diameter cable (Max.20mm)	Touching	
Number of burners	1	1	1	2	1		1		1	
Ladder mounting	Front and rear	Front, Wider ladder for larger cables			Front		Front		Front	
Flame application time(min)	40	40	40		40		40		40	
Test conditions	Wind speed: <8 m/s; Ternperature: 5°C - +40°C									
Extent of the charred portion	≤2.5m above the bottom edge of the burner, neither at the front nor at the rear of the ladder.									

Reduced fire propagation in accordance with NF C32-070-2.2(C1)

NF C32-070 :2001 Insulated conductors and cables for installation.
-Classification tests on conductors and cables with regard to fire behavior.

A 1600mm vertically installed bundled of cable is exposed to the effects of a radiating oven (approx 830°C) and forced ventilation. Pilot flames arranged above the oven burn off the emitted gases. The test duration is 30 minutes, with the ventilation stopped for every 10 minutes during the flame application period. The cable sample is classified under Category C1 according to NF F 32070-2.2 if the carbonised part of the cable sample does not extend more than 0.8m above the upper base of the oven.

Depending on the damaged length, they can be further classified into 4 classes A, B, C and D according to NF F 16-101 as follows:

Category	Test Result
A	No damaged length from top of the oven in upper position.
B	Damaged length from top of oven in upper position not extending more than 50mm.
C	Damaged length from top of oven in upper position not extending more than 300mm
D	Damaged length from top of oven in upper position not extending above the top of the chimney

Reduced Fire Propagation in accordance to EN 50266-1, EN 50266-2-2, EN 50266-2-3, EN 50266-2-4.

EN 50266-1:2001 / BS EN 50266-1:2001 / DIN EN 50266-1:2001 / VDE 0482-266-1:2001-09– Common test methods for cables under fire conditions. Test for vertical flame spread of vertically mounted bunched wires or cables - Part 1: Apparatus (Replaced by EN 60332-3-10:2009)

EN 50266-2-1:2001 / BS EN 50266-2-1:2001 / DIN EN 50266-2-1:2001 / VDE 0482-266-2-1:2001-09

/ CEI EN 50266-2-1– Common test methods for cables under fire conditions. Test for vertical flame spread of vertically mounted bunched wires or cables - Part 2-1 : Procedures. Category A F/R (Replaced by EN 60332-3-21:2009)

EN 50266-2-2:2001 / BS EN 50266-2-2:2001 / DIN EN 50266-2-2:2001 / VDE 0482-266-2-2:2001-09 / CEI EN 50266-2-2– Common test methods for cables under fire conditions. Test for vertical flame spread of vertically mounted bunched wires or cables - Part 2-2: Procedures. Category A (Replaced by EN 60332-3-22:2009)

EN 50266-2-3:2001 / BS EN 50266-2-3:2001 / DIN EN 50266-2-3:2001 / VDE 0482-266-2-3:2001-09 / CEI EN 50266-2-1– Common test methods for cables under fire conditions. Test for vertical flame spread of vertically mounted bunched wires or cables - Part 2-3: Procedures. Category B (Replaced by EN 60332-3-23:2009)

EN 50266-2-4:2001 / BS EN 50266-2-4:2001 / DIN EN 50266-2-4:2001 / VDE 0482-266-2-4:2001-09 / CEI EN 50266-2-4:2001 – Common test methods for cables under fire conditions. Test for vertical flame spread of vertically mounted bunched wires or cables - Part 2-4: Procedures. Category C (Replaced by EN 60332-3-24:2009).

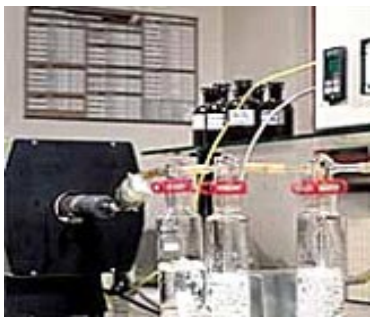
Reduced Fire Propagation in accordance with BS 4066-3

BS 4066-3:1994 (superseded) – Tests on electic cables under fire conditions. Tests on bunched wires or cables.
This standard is no longer in force and is replaced by the BS EN 50266-1:2001

Reduced Fire Propagation in accordance with NBN C 32-004 (F2)

NBN C 32-004 specifies a method of test for measuring the vertical flame propagation characteristics of a bunch of cables. The cable specimen is deemed to have passed the test and categorized as F2 if after burning has ceased, the extent of charred or affected portion does not reach a height exceeding 2.5m above the bottom edge of the burner.

HALOGEN CONTENT TEST IN ACCORDANCE WITH DIFFERENT STANDARDS



In the event of a fire, many fumes are produced. This test is concerned with the possibilities of corrosive acid gases being released from halogen containing cables and the damage such cables can cause (to equipments). These standards specify a method for determination of the amount of halogen acid gas, evolved during combustion of compound.

Halogen Content Test in accordance with EN 50267-2-1

EN 50267-2-1:1998 / BS EN 50267-2-1:1999 / DIN EN 50267-2-1:1999 / VDE 0482-267-2-1:1999-04 / CEI EN 50267-2-1:1999 (CEI 20-37/2-1) Common test methods for cables under fire conditions- Test on gases evolved during combustion of materials from cables- Part 2-1: Procedures. Determination of the amount of halogen acid gas.
This part of the standard defines the method to measure the amount of halogen acid evolved and

which should be expressed in hydrochloric acid. The amount of halogen acid contained in the test solution is determined by a titration method.
If the cables are described as zero halogen or halogen free, it is recommended that the hydrochoric acid yield should be less than 0.5%.

Halogen Content Test in accordance with IEC 60754-1

IEC 60754-1 ed 2.0 Common test methods for cables under fire conditions. Test on gases evolved during combustion of materials from cables. Part 1: Procedures. Determination of the amount of halogen acid gas.
Basically, this is same as EN 50267-2-1.

Halogen Content Test in accordance with BS 6425-1

BS 6425-1:1990(superseded): Test on gases evolved during the combustion of materials from cables. Method for determination of amount of halogen acid gas evolved during combustion of polmeric materials taken from cables.
This standard is no longer in force and is replaced by the EN 50267-2-1.

ACID GAS EMISSION TEST IN ACCORDANCE WITH DIFFERENT STANDARDS

The following standards specify a method for determination of acidity of gas evolved during combustion of cables by measuring PH and conductivity. This test allows to determine the corrosivity of the acid gases generally halogens, that develop during the electric cable combustion.

Acid Gas Emission Test in accordance with EN 50267-2-2

EN 50267-2-2:1999 / BS EN 50267-2-2:1999 / DIN EN 50267-2-2:1999 / VDE 0482-267-2-2:1999-04 / CEI EN 50267-2-2:1999 (CEI 20-37/2-2). Common test methods for cables under fire conditions- Test on gases evolved during combustion of materials from cables- Part 2-2: Procedures. Determination of degree of acidity of gases for materials by measuring PH and conductivity

The standard states that the pH and the conductivity of a test solution should be measured, using calibrated PH and conductivity meters.

If the cables are described as zero halogen or halogen free, it is recommended that at least both of the following requirements should be met for each of the individual materials of a cable:

-The PH value should not be less than 4.3 when related to 1 litre of water
-The conductivity should not be less than 10us/mm when related to 1 litre of water

EN 50267-2-3:1999 / BS EN 50267-2-3:1999 / DIN EN 50267-2-3:1999 / VDE 0482-267-2-3:1999-04 / CEI EN 50267-2-3:1999 (CEI 20-37/2-3). Common test methods for cables under fire conditions- Test on gases evolved during combustion of materials from cables- Part 2-3:Procedures. Determination of degree of acidity of gases for cables by determination of the weighted average of pH and conductivity.

The standard states that the pH and the conductivity of a test solution should be measured, using calibrated pH and conductivity meters. The results from the different components of the cable are then weighted.

Acid Gas Emission Test in accordance with IEC 60754-2

IEC 60754-2 ed1.0 Test on gases evolved during combustion of electric cables - Part 2 : Determination of degree of acidity of gases evolved during combustion of materials taken from electric cables by measuring pH and conductivity.

Acid Gas Emission Test in accordance with NF C32-074

NF C32-074 Common test methods for cables under fire conditions - Test on gases evolved during combustion of materials from cables. This standard is equivalent to IEC 60754-2

Acid Gas Emission Test in accordance with BS 6425-2

BS 6425-2:1993 (superseded) Test on gases evolved during the combusion of materials from cables. Determination of degree of acidity (corrosivity) of gases by measuring pH and conductivity.

This standard is no longer in force and is replaced by the EN 50267-2-2:1999.

Acid Gas Emission Test in accordance with DIN VDE 0472-813 / VDE 0472-813:1994

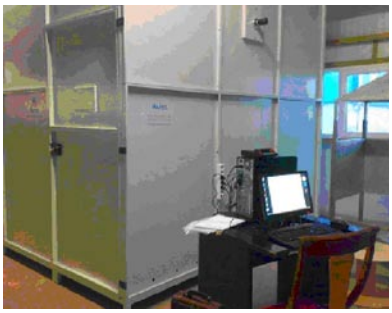
DIN VDE 0472-813 / VDE 0472-813:1994 Corrosivity of combustion gases.

The standards are no longer in force and are replaced by the EN 50267-2-2 & VDE 0482-267-2-2.

SMOKE DENSITY TEST IN ACCORDANCE WITH DIFFERENT STANDARDS

The smoke density measurement taken from a material under fire conditions gives an indication of the visibility through the smoke. This is important as reduced visibility in a real fire situation makes it more difficult to escape from the fire thus increasing the threat to human life from the toxic gas, fumes and heat

The following standards specify the method for measuring the generation of smoke from cables during fire.



Smoke Density Test in accordance with IEC 61034-1 & IEC 61034-2

IEC 61034-1:2005 / EN 61034-1:2005 / BS EN 61034-1:2005 / DIN EN 61034-1:2006 / VDE 0482-1034-1:2006 Measurement of smoke density of cables burning under defined conditions. Part 1: Test apparatus

IEC 61034-2:2005 / EN 61034-2:2005 / BS EN 61034-2:2005 / DIN EN 61034-2:2006 / VDE 0482-1034-2:2006 / CEI EN 61034-2:2006 (CEI 20-37/3-1) Measurement of smoke density of cables burning under defined conditions.
Part 2: Test procedure and requirements.

The standard specifies a method of measurement of smoke density of cables. Part 1 specifies the test apparatus and Part 2 specifies the test procedure.
The test is usually performed inside a chamber of 3m x3m x3m and the test is sometimes described

as 3 metre cube test. The test is performed by monitoring the tranmittance reduction of a white light beam, running from one side of the chamber to the other, at a set height, thus monitoring the build up of smoke inside the chamber. The minimum percentage of light transmittance is often used to determine if the cable has passed or failed the test , often a minimum light transmittance of 60% is applied in order to classify a cable as low smoke.

Smoke Density Test in accordance with NF C32- 073

NF C32 073 Common test methods for cables under fire conditions.
- Measurement of smoke density of cables burning under defined conditions.
This standard is equivalent to IEC 61034-2

Smoke Density Test in accordance with BS 7622-1 & BS 7622-2

BS 7622-1:1993 (superseded) – Measurement of smoke density of electric cables burning under defined condiitions. Test apparatus.
BS 7622-2:1993 (superseded) – Measurement of smoke density of electric cables burning under defined condiitions. Test procedure and requirements.

The standards are no longer in force and were replaced by the EN 50268-1:2000 and EN 50268-2:2000 even though they too were superseded by EN 61034-1:2005 and EN 61034-2:2005.

Smoke Density Test in accordance with EN 50268-1 & EN 50268-2

EN 50268-1:2000 / BS EN 50268-1:2000 / DIN EN 50268-1:2000 / VDE 0482-268-1:2000 (superseded) – Common test methods for cables under fire conditions. Measurement of smoke density of cable burning under defined conditions. Part 1: Apparatus
EN 50268-2:2000 / BS EN 50268-2:2000 / DIN EN 50268-2:2000 / VDE 0482-268-2:2000 (superseded) – Common test methods for cables under fire conditions. Measurement of smoke density of cable burning under defined conditions. Part 2: Procedure.
The standards are no longer in force and are replaced by the EN 61034-1:2005 and EN 61034-2:2005. Although these standards have been withdrawn, they are still called upon in some specification documents such as in the London Underground specification 1-085.

Smoke Density Test In Accordance with DIN VDE 0472-816 / VDE 0472-816:1994

DIN VDE 0472-816/VDE 0472-816:1994 Testing of cables, wires and flexible cords. Smoke Density.

The standards are no longer in force and are replaced by the EN 50268-1, VDE 0482-268-1, EN 50268-2 & VDE 0482-268-2 which are also replaced by the EN 61034-1:2005 and EN 61034-2:2005.

OXYGEN INDEX TEST IN ACCORDANCE WITH DIFFERENT STANDARDS

The oxygen index is defined as the minimum concentration of oxygen, expressed as volume percentage, in a mixture of oxygen and nitrogen that will just support combustion of a material initially at room temperature under specified test conditions.

Oxygen Index Test in accordance with ASTM D 2863

ASTM D 2863-10 Measuring the minimum oxygen concentration to support candle-like combustion of plastics (Oxygen Index).

The test is performed in accordance with the procedure specified in ASTM 2863-95 using test piece cut from the outer sheath of the cable. The apparatus holds a small specimen which is clamped vertically in a tube in an atmosphere where the relative concentration of oxygen and nitrogen can be changed. The aim is to test the flammability of the sample with a small pilot flame to find the minimum oxygen concentration required to just sustain combustion of the sample.

Oxygen Index Test in accordance with ISO 4589-2

ISO4589-2:1996 Determination of burning behaviour by oxygen index Part 2: Ambient temperature test.
Specimens measuring 100mm long by 6mm wide are used for testing. The test is performed in accordance with the procedure specified in the standard.

TEMPERATURE INDEX TEST IN ACCORDANCE WITH DIFFERENT STANDARDS

This is a test for assessing the performance of a material when it is tested in accordance with BS2782: Part 1: Method 143a and 143b. The oxygen index of a material will drop when the temperature rises. When the temperature rises and the oxygen index drops to 21%, the material will burn automatically. This temperature is defined as temperature index. For example, the oxygen index of the coal at room temperature is 50% and when the temperature climbs to 150°C, it's oxygen index drops to 21°C and the coal will burn by itself automatically. The temperature index of the coal is defined as 150°C. In general, the temperature index of fire retardant cable exceeds 250°C.

Temperature Index Test in accordance with BS 2782

BS 2782: Part 1:1989 Method 143a and 143b Temperature of materials. Determination of flammability.
Specimens measuring nominally 100mm long by 6.5mm wide by 3mm thick are used for testing. The specimens are then tested in accordance with the test procedure specified in the standard.

Temperature Index Test in accordance with ISO 4589-3

ISO4589-3:1996 Determination of burning behaviour by oxygen index Part 3: Elevated temperature test.
Specimens measuring 100mm long by 6mm wide are used for testing. The test is performed in accordance with the procedure specified in the standard.

TOXICITY TEST IN ACCORDANCE WITH DIFFERENT STANDARDS

Toxicity test in accordance with NES 02-713

Measuring a fume from a material exposed to a controlled fire conditions gives an indication of the fumes which may be produced in a real fire situation. A standard method of test for determining the toxicity of materials under fire condition is Defense Standard NES 02-713- Toxicity. This method gives the level of toxicity of the fumes produced from the material under test. During the test, the test specimen is heated via direct flame application at 1150°C.

The flame is applied via a bunsen burner with a flame height of between 100m and 125mm formed with a methane gas and an external supply of compressed air. The specimen toxicity is determined

from accurate pre-analysis weight (4pp) colorimetric tubes and ion chromatography.

The test may determine the following species: Hydrogen Bromide, Hydrochloric Acid, Hydrogen Fluoride, Formaldehyde, Nitrous gases, Carbon Monoxide, Carbon Dioxide, Acrylonitrile, Phenol,
Hydrogen Sulphide, Sulphur Dioxide, Hydrocyanic Acid, Ammonia. The concentration in ppm for each gas detected are provided. The toxicity index of the speciments summates the toxic gases, taking into account of their level of danger to humans. The smaller the toxicity index, the better the product. A limit of 5 is often applicable.

Toxicity test in accordance with NF C 20-454

NF C 20-454 base environmental testing procedures. Fire behaviour. Analysis and titration of gases evolved during pyrolysis or combustion of materials used in electrotechnics. Exposure to abnormal heat or fire. Tube furnace method.

The test defined by this standard serves to define the conventional toxicity index (cti) of the gases emitted by the insulating or sleeving materials during combustion at 800°C.

Toxicity test in accordance with NF X 70-100

NF X 70-100 Fire Tests; Analysis of gaseous effluents.
The test is conducted within a tube furnace where the temperature is set at either 400°C, 600°C, 800°C (commonly 600°C is used for most of the materials or 800°C for some electrical products) for 40 minutes throughout the test by analysis of the toxicity index of the gases including CO, CO_2, HCL, HBr, HCN, HF and SO_2.

ADDISON

Address:

Marchants Industrial Centre, Mill Lane, Laughton, Lewes,

East Sussex, BN8 6AJ, UK

Tel: 44(0) 207 4195087

Fax: 44(0) 207 8319489

E-mail:sales@caledonian-cables.co.uk

www.caledonian-cables.co.uk