

XLPE Insulated, Shielded or Non-shielded 5 kV Primary Airfield Lighting Cables according to the FAA AC 150/5345-7E (L-824) Specification

APPLICATION:

For runway, taxiway and approach in underground primary series airfield lighting circuits. At 5 kV rated voltage and maximum conductor temperatures of 90 °C for continuous normal operation and 250 °C for short circuit. Suitable for use in wet or dry conditions in metallic and non-metallic conduits, ducts, aerial and direct burial installations.

STANDARDS:

Conforms to:

1. FAA Advisory Circular (AC) 150/5345-7E, Specification for L-824, Type C;
2. NEMA WC71 / ICEA S-96-659-1999 for non-shielded cables;
3. NEMA WC74-2000 / ICEA S-93-639-1999 for shielded cables.

CERTIFICATION:

1. ETL Certified
2. FAA Listed as an Approved Supplier

CONSTRUCTION:

Three types of cable are provided:

1. **Non-shielded and non-jacketed type:** a bare



copper seven wires stranded circular conductor has an extruded tracking resistant XLPE (cross-linked polyethylene) insulation. Optionally, a separator or conductor shield may be applied between both.

2. **Non-shielded jacketed type:** a bare copper seven wires stranded circular conductor has an extruded XLPE (cross-linked polyethylene) insulation. Optionally, a separator or conductor shield may be applied between both.

A PVC or PE outer jacket is applied overall on an optional separating tape;

3. **Shielded jacketed type:** a bare copper seven wires stranded circular conductor has an

extruded conductor shield and a XLPE (cross-linked polyethylene) insulation. A non-metallic insulation shield supplemented with a metallic shield (brass or copper tape; bare or tinned copper wires; or bare or tinned copper braiding) is applied underneath the PVC or PE outer jacket. Optionally, a separator may be applied under the jacket.

PACKAGING

Standard supply lengths are 3000 ft. Other bobbin lengths are available upon request.

5000 V Non-shielded and Non-jacketed Cables

	Conductor				Separator tape or conductor shield		Nominal insulation thickness	Nominal diameter	Ampacity in underground duct (1)
	Size	Number of strands	Nominal Diameter	DC resistance at 25 °C	Option	Thickness			
	AWG	-	inches	Ω/1000 ft	-	mils			
	8	7	0.143	0.652	None	-	110	0.363	64
	6	7	0.180	0.411	None	-	110	0.400	85
	4	7	0.226	0.258	None	-	110	0.446	110
	8	7	0.143	0.652	Separator	0.5	110	0.364	64
	6	7	0.180	0.411	Separator	0.5	110	0.401	85
	4	7	0.226	0.258	Separator	0.5	110	0.447	110
	8	7	0.143	0.652	Cond. Shield	20	110	0.403	64
	6	7	0.180	0.411	Cond. Shield	20	110	0.440	85
	4	7	0.226	0.258	Cond. Shield	20	110	0.486	110

	Conductor				Separator tape or conductor shield		Nominal insulation thickness	Separator tape thickness	Jacket		Nominal diameter	Amcapacity in underground duct (1)
	Size	Number of strands	Nominal Diameter	DC resistance at 25 °C	Option	Thickness			Thickness	Material type		
	AWG	-	inches	Ω/1000 ft	-	mils			mils	mils		
	8	7	0.143	0.652	None	-	90	6	30	PVC	0.395	64
	8	7	0.143	0.652	None	-	90	6	30	PE	0.395	64
	6	7	0.180	0.411	None	-	90	6	30	PVC	0.432	85
	6	7	0.180	0.411	None	-	90	6	30	PE	0.432	85
	4	7	0.226	0.258	None	-	90	6	45	PVC	0.508	110
	4	7	0.226	0.258	None	-	90	6	45	PE	0.508	110
	8	7	0.143	0.652	Separator	0.5	90	6	30	PVC	0.396	64
	8	7	0.143	0.652	Separator	0.5	90	6	30	PE	0.396	64
	6	7	0.180	0.411	Separator	0.5	90	6	30	PVC	0.433	85
	6	7	0.180	0.411	Separator	0.5	90	6	30	PE	0.433	85
	4	7	0.226	0.258	Separator	0.5	90	6	45	PVC	0.509	110
	4	7	0.226	0.258	Separator	0.5	90	6	45	PE	0.509	110
	8	7	0.143	0.652	Cond. Shield	20	90	6	30	PVC	0.435	64
	8	7	0.143	0.652	Cond. Shield	20	90	6	30	PE	0.435	64
	6	7	0.180	0.411	Cond. Shield	20	90	6	30	PVC	0.472	85
	6	7	0.180	0.411	Cond. Shield	20	90	6	30	PE	0.472	85
	4	7	0.226	0.258	Cond. Shield	20	90	6	45	PVC	0.548	110
	4	7	0.226	0.258	Cond. Shield	20	90	6	45	PE	0.548	110

5000 V Shielded and Jacketed Cables

	Conductor				Minimum conductor shield thickness	Nominal insulation thickness	Non-metallic insulation shield thickness	Separator tape thickness	Jacket		Nominal diameter	Amcapacity in underground duct (1)
	Size	Number of strands	Nominal Diameter	DC resistance at 25 °C					Thickness	Material type		
	AWG	-	inches	Ω/1000 ft					mils	mils		
BRASS TAPE SHIELD 4 MILS THICK												
	8	7	0.143	0.652	6	90	6	6	55	PVC	0.51	64
	8	7	0.143	0.652	6	90	6	6	55	PE	0.51	64
	6	7	0.180	0.411	6	90	6	6	55	PVC	0.55	85
	6	7	0.180	0.411	6	90	6	6	55	PE	0.55	85
	4	7	0.226	0.258	6	90	6	6	55	PVC	0.60	110
	4	7	0.226	0.258	6	90	6	6	55	PE	0.60	110
BARE COPPER TAPE SHIELD 4 MILS THICK												
	8	7	0.143	0.652	6	90	6	6	55	PVC	0.51	64
	8	7	0.143	0.652	6	90	6	6	55	PE	0.51	64
	6	7	0.180	0.411	6	90	6	6	55	PVC	0.55	85
	6	7	0.180	0.411	6	90	6	6	55	PE	0.55	85
	4	7	0.226	0.258	6	90	6	6	55	PVC	0.60	110
	4	7	0.226	0.258	6	90	6	6	55	PE	0.60	110
BARE COPPER WIRES SHIELD. 20 MILS WIRE DIAMETER												
	8	7	0.143	0.652	6	90	6	6	55	PVC	0.54	64
	8	7	0.143	0.652	6	90	6	6	55	PE	0.54	64
	6	7	0.180	0.411	6	90	6	6	55	PVC	0.57	85
	6	7	0.180	0.411	6	90	6	6	55	PE	0.57	85
	4	7	0.226	0.258	6	90	6	6	55	PVC	0.62	110
	4	7	0.226	0.258	6	90	6	6	55	PE	0.62	110
TINNED COPPER WIRES SHIELD. 20 MILS WIRE DIAMETER												
	8	7	0.143	0.652	6	90	6	6	55	PVC	0.54	64
	8	7	0.143	0.652	6	90	6	6	55	PE	0.54	64
	6	7	0.180	0.411	6	90	6	6	55	PVC	0.57	85
	6	7	0.180	0.411	6	90	6	6	55	PE	0.57	85
	4	7	0.226	0.258	6	90	6	6	55	PVC	0.62	110
	4	7	0.226	0.258	6	90	6	6	55	PE	0.62	110

Catalog Number	Conductor				Minimum conductor shield thickness	Nominal insulation thickness	Non-metallic insulation shield thickness	Separator tape thickness	Jacket		Nominal diameter	Ampacity in underground duct (1)
	Size	Number of strands	Nominal Diameter	DC resistance at 25 °C					Thickness	Material type		
	AWG	-	inches	Ω/1000 ft					mils	mils		
BARE COPPER BRAIDED SHIELD. 6 MILS WIRE DIAMETER												
	8	7	0.143	0.652	6	90	6	6	55	PVC	0.53	64
	8	7	0.143	0.652	6	90	6	6	55	PE	0.53	64
	6	7	0.180	0.411	6	90	6	6	55	PVC	0.57	85
	6	7	0.180	0.411	6	90	6	6	55	PE	0.57	85
	4	7	0.226	0.258	6	90	6	6	55	PVC	0.61	110
	4	7	0.226	0.258	6	90	6	6	55	PE	0.61	110
TINNED COPPER BRAIDED SHIELD. 6 MILS WIRE DIAMETER												
	8	7	0.143	0.652	6	90	6	6	55	PVC	0.53	64
	8	7	0.143	0.652	6	90	6	6	55	PE	0.53	64
	6	7	0.180	0.411	6	90	6	6	55	PVC	0.57	85
	6	7	0.180	0.411	6	90	6	6	55	PE	0.57	85
	4	7	0.226	0.258	6	90	6	6	55	PVC	0.61	110
	4	7	0.226	0.258	6	90	6	6	55	PE	0.61	110

(1) Ampacity according to NEC Table 310.77: Three Single-Insulated Copper Conductors in Underground Electrical Ducts (Three Conductors per Electrical Duct) Based on Ambient Earth Temperature of 20°C (68°F), 100 Percent Load Factor, Thermal Resistance (RHO) of 90, Conductor Temperatures of 90°C (194°F)

The information given in this page is subject to change without notice.

Airfield Lighting Cables

XLPE Insulated, Shielded or Non-shielded 5 kV Primary Airfield Lighting Cables according to the FAA AC 150/5345-7E (L-824) Specification

Specification

SCOPE

This specification describes XLPE insulated shielded or non-shielded single core 5 kV cables for runway, taxiway and approach in Wunderground primary series airfield lighting circuits. For a maximum conductor temperatures of 90 °C for continuous normal operation and 250 °C for short circuit, in wet or dry conditions. Suitable for use in metallic and non-metallic conduits, ducts, aerial and direct burial installations.

STANDARDS

The following standards shall form a part of this specification to the extent specified herein:

- Conforms to FAA Advisory Circular (AC) 150/5345-7E, Specification for L-824, Type C, Underground Electrical Cable for Airfield Lighting Circuits
- NEMA WC71 / ICEA S-96-659-1999: "Standard for Non-shielded Power Cables Rated 2,001 – 5,000 Volts for the Distribution of Electrical Energy" as referenced by FAA AC 150/5345-7E.
- NEMA WC74-2000 / ICEA S-93-639-1999: "Standard for Shielded Power Cables Rated 5,000 – 46,000 Volts for the Transmission & Distribution of Electrical Energy" as referenced by FAA AC 150/5345-7E.

CONDUCTORS

Bare soft annealed, high conductivity copper per ASTM B-3, concentric stranded, class B (seven strands) per ASTM B 8. Class C (19 strands) is available upon request.

SEPARATOR (for non-shielded cables)

An optional separator is applied to facilitate the insulation stripping.

CONDUCTOR SHIELD

Optional for non-shielded cables, it is mandatory for shielded cables. Accordingly, the conductors are covered with a layer of extruded conducting cross-linked polyolefin compound, firmly bonded to the insulation and which shall meet the requirements of NEMA WC74-2000 / ICEA S-93-639-1999 Standard, Section 3.

INSULATION

Directly over the conductor, separator or screen (as applicable) shall be applied a homogeneous wall of XLPE insulation. For non-shielded cables it shall meet the requirements of NEMA WC71 / ICEA S-96-659-1999, Table 4-2. For shielded cables it shall meet the requirements of NEMA WC74-2000 / ICEA S-93-639-1999 Standard, Section 4.

INSULATION SHIELD (for shielded cables)

- The insulation shield shall consist of a graphite coating in combination with semi-conducting tape and a metallic layer applied directly over the insulation.
- The metallic layer shall consist of one of the following:
 - an overlapping copper tape
 - an overlapping brass tape
 - helically applied bare copper wires
 - helically applied tinned copper wires
 - bare copper wires braid
 - tinned copper wires braid
- Other tape thickness or wire diameter than the ones indicated in the tables can be supplied upon request.
- An optional separator tape may be applied over all.

OVERALL JACKET

- Where applicable, an extruded PVC or black PE jacket shall be applied on the assembly.
- Properties of the jacket shall be in accordance with NEMA WC71 / ICEA S-96-659-1999 Standard, Table 5-1 or NEMA WC74-2000 / ICEA S-93-639-1999 Standard, Table 7-1 depending upon the cable type.

TESTS

The cable shall be tested in accordance with NEMA WC71 / ICEA S-96-659-1999 Standard, Table 5-1 or NEMA WC74-2000 / ICEA S-93-639-1999 Standard, Table 7-1 depending upon the cable type.