

No. ; SP97-23-90059 Rev.2

Date ; Nov. 28, 1997

# SPECIFICATION

( SP97-23-90059 Rev.2 )

FOR

UL RECOGNIZED FLUORINATED ETHYLENE  
PROPYLENE INSULATED WIRES

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P/N ; UL1227  
UL1330  
UL1331  
UL1332  
UL1333

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Quantity

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Your Ref. No.

Our Ref. No.

Signed by



YASUO OHTA

Senior Engineer

Electronic Wire & Cable design department

## Hitachi Cable, Ltd.

Issue and revision record

Rev. No.	Issue date	Item	Prepared by	Approved by
2	Nov. 28, 1997	Initial issue	<i>Y. Yamamoto</i> Y. Yamamoto	<i>Y. Ohta</i> Y. Ohta

**1. Scope**

This specification covers UL recognized extruded fluorinated ethylene propylene(FEP) insulated wires for internal wiring of appliances which are in accordance with UL Subject 758.

[ UL Style 1227 / 105°C Voltage not specified ]

[ UL Style 1330 / 200°C 600V ]

[ UL Style 1331 / 150°C 600V ]

[ UL Style 1332 / 200°C 300V ]

[ UL Style 1333 / 150°C 300V ]

**2. Construction and materials**

The construction of wires shall be in accordance with the below and Table 1,2,3,4,5.

Conductor	UL1227 UL1331 UL1333	tinned annealed copper wire
	UL1330 UL1332	silver plated annealed copper wire
Insulation ( FEP )	UL1227	min. ave. thick. : 0.204mm ( 8mils) min. thick. at any point : 0.178mm ( 7mils)
	UL1330 UL1331	min. ave. thick. : 0.508mm (20mils) min. thick. at any point : 0.458mm (18mils)
	UL1332 UL1333	min. ave. thick. : 0.330mm (13mils) min. thick. at any point : 0.305mm (12mils)
Color	Black, White, Red, Blue, Yellow, Green, Orange, Brown, Gray, Violet	

**3. Marking****3.1 Marking on the wire**

No marking on the wires.

**3.2 Marking on the tag attached to coil**

Each coils shall be tagged to show the following information with UL stamp.

- |                      |                           |
|----------------------|---------------------------|
| (1) UL Style         | (8) File No.              |
| (2) Conductor size   | (9) Max. temperature      |
| (3) No. of conductor | (10) Max. voltage         |
| (4) Color            | (11) Date of manufacture  |
| (5) Lot No.          | (12) Insulation thickness |
| (6) Length           | (13) Name of manufacture  |
| (7) Use              |                           |

Table 1 UL 1227 (105°C, Voltage not specified)

Conductor			Insulation		Max. conductor resistance at 20°C (Ω/km)	※) Min. Insulation resistance at 20°C (MΩ-km)	※) Dielectric strength	Unit length (m)	Packing
AWG size	Construction (No./mm)	Diameter (mm)	Thickness (mm)	Diameter (approx.) (mm)					
30	1/0.26	0.26	0.22	0.70	374	1000	withstand A.C.1500V for 1min.	610	coil
	7/0.102	0.30	0.22	0.74	354	1000		610	coil
28	1/0.32	0.32	0.22	0.76	232	1000		610	coil
	7/0.127	0.38	0.22	0.82	223	1000		610	coil
26	1/0.404	0.41	0.22	0.85	145	1000		610	coil
	7/0.16	0.48	0.22	0.92	139	1000		610	coil
24	1/0.511	0.51	0.22	0.95	89.2	1000		610	coil
	7/0.203	0.60	0.22	1.04	85.9	1000		610	coil
22	1/0.643	0.64	0.22	1.08	56.4	1000		610	coil
	7/0.26	0.78	0.22	1.22	54.7	1000		610	coil
20	1/0.813	0.81	0.22	1.25	35.1	1000		610	coil
	7/0.32	0.96	0.22	1.40	34.1	1000		610	coil

※) The spark test may be substituted in a production line.

Table 2 U L 1 3 3 0 (200°C、600V)

Conductor			Insulation		Max. conductor resistance at 20°C (Ω/km)	※)Min. insulation resistance at 20°C (MΩ-km)	※) Dielectric strength	Unit length (m)	Packing
AWG size	Construction (No./mm)	Diameter (mm)	Thickness (mm)	Diameter (approx.) (mm)					
26	1/0.404	0.41	0.55	1.51	137	1000	withstand A.C.2000V for 1min.	305	coil
	7/0.16	0.48	0.55	1.58	130	1000		305	coil
24	1/0.511	0.51	0.55	1.61	85.9	1000		305	coil
	7/0.203	0.61	0.55	1.71	80.3	1000		305	coil
22	1/0.643	0.64	0.55	1.74	54.1	1000		305	coil
	7/0.26	0.78	0.55	1.88	51.1	1000		305	coil
20	1/0.813	0.81	0.55	1.91	33.8	1000		305	coil
	7/0.32	0.96	0.55	2.06	32.1	1000		305	coil
18	19/0.26	1.30	0.55	2.40	18.9	1000		305	coil
16	19/0.287	1.43	0.55	2.53	14.8	1000		305	coil
14	19/0.361	1.80	0.55	2.90	9.41	1000		305	coil
12	37/0.32	2.24	0.55	3.34	6.20	1000		305	coil
10	37/0.404	2.82	0.55	3.92	3.90	1000	305	coil	

※) The spark test may be substituted in a production line.

Table 3 U L 1 3 3 1 ( 150°C, 600V )

Conductor			Insulation		Max. conductor resistance at 20°C ( Ω/km )	※)Min. Insulation resistance at 20°C ( M Ω-km )	※) Dielectronic strength	Unit length (m)	Packing
AWG size	Construction (No./mm)	Diameter (mm)	Thickness (mm)	Diameter (approx.) (mm)					
26	1/0.404	0.41	0.55	1.51	145	1000	withstand A.C.2000V for 1min.	305	coil
	7/0.16	0.48	0.55	1.58	139	1000		305	coil
24	1/0.511	0.51	0.55	1.61	89.2	1000		305	coil
	7/0.203	0.60	0.55	1.70	85.9	1000		305	coil
22	1/0.643	0.64	0.55	1.74	56.4	1000		305	coil
	7/0.26	0.78	0.55	1.88	54.7	1000		305	coil
20	1/0.813	0.81	0.55	1.91	35.1	1000		305	coil
	7/0.32	0.96	0.55	2.06	34.1	1000		305	coil
18	19/0.26	1.30	0.55	2.40	20.4	1000		305	coil
16	19/0.287	1.43	0.55	2.53	15.8	1000		305	coil
14	19/0.361	1.80	0.55	2.90	9.99	1000		305	coil
12	37/0.32	2.24	0.55	3.34	6.59	1000		305	coil
10	37/0.404	2.82	0.55	3.92	4.13	1000		305	coil

※) The spark test may be substituted in a production line.

Table 4 U L 1 3 3 2 ( 200°C, 300 V )

Conductor			Insulation		Max. conductor resistance at 20°C ( Ω/km )	※) Min. Insulation resistance at 20°C ( M Ω-km )	※) Dielectronic strength	Unit length (m)	Packing
AWG size	Construction (No./mm)	Diameter (mm)	Thickness (mm)	Diameter (approx.) (mm)					
28	1/0.32	0.32	0.36	1.04	218	1000	withstand A.C.2000V for 1min.	610	coil
	7/0.127	0.38	0.36	1.10	208	1000		610	coil
26	1/0.404	0.41	0.36	1.13	137	1000		610	coil
	7/0.16	0.48	0.36	1.20	130	1000		610	coil
24	1/0.511	0.51	0.36	1.23	85.9	1000		610	coil
	7/0.203	0.61	0.36	1.33	80.3	1000		610	coil
22	1/0.643	0.64	0.36	1.36	54.1	1000		610	coil
	7/0.26	0.78	0.36	1.50	51.1	1000		610	coil
20	1/0.813	0.81	0.36	1.53	33.8	1000		610	coil
	7/0.32	0.96	0.36	1.68	32.1	1000		610	coil
18	19/0.26	1.30	0.36	2.02	18.9	1000		305	coil
16	19/0.287	1.43	0.36	2.15	14.8	1000		305	coil
14	19/0.361	1.80	0.36	2.52	9.41	1000		305	coil
12	37/0.32	2.24	0.36	2.96	6.20	1000		305	coil
10	37/0.404	2.82	0.36	3.54	3.90	1000	305	coil	

※) The spark test may be substituted in a production line.

Table 5 U L 1 3 3 3 ( 150°C, 300 V )

Conductor			Insulation		Max. conductor resistance at 20°C (Ω/km)	*) Min. Insulation resistance at 20°C (MΩ-km)	*) Dielectronic strength	Unit length (m)	Packing
AWG size	Construction (No./mm)	Diameter (mm)	Thickness (mm)	Diameter (approx.) (mm)					
28	1/0.32	0.32	0.36	1.04	232	1000	withstand A.C.2000V for 1min.	610	coil
	7/0.127	0.38	0.36	1.10	223	1000		610	coil
26	1/0.404	0.41	0.36	1.13	145	1000		610	coil
	7/0.16	0.48	0.36	1.20	139	1000		610	coil
24	1/0.511	0.51	0.36	1.23	89.2	1000		610	coil
	7/0.203	0.60	0.36	1.32	85.9	1000		610	coil
22	1/0.643	0.64	0.36	1.36	56.4	1000		610	coil
	7/0.26	0.78	0.36	1.50	54.7	1000		610	coil
20	1/0.813	0.81	0.36	1.53	35.1	1000		610	coil
	7/0.32	0.96	0.36	1.68	34.1	1000		610	coil
18	19/0.26	1.30	0.36	2.02	20.4	1000		305	coil
16	19/0.287	1.43	0.36	2.15	15.8	1000		305	coil
14	19/0.361	1.80	0.36	2.52	9.99	1000		305	coil
12	37/0.32	2.24	0.36	2.96	6.59	1000		305	coil
10	37/0.404	2.82	0.36	3.54	4.13	1000	305	coil	

※) The spark test may be substituted in a production line.