

Hitachi Cable

Hitachi Cable (S) Pte. Ltd.

No.17 LOKYANG WAY, JURONG TOWN SINGAPORE 628634




SPEC No.
SP-EH 30001
Rev. 1

SPECIFICATION

FOR

UL RECOGNIZED FLAME RETARDANT, IRRADIATED CROSS-LINKED
FOAMED POLYETHYLENE INSULATED
LEAD FREE SHIELD WIRE

(UL1691-SW LF)

WRITTEN	CHECKED	APPROVED
		

MADE IN SINGAPORE

1 Scope

This specification covers UL recognized flame retardant, irradiated cross-linked foamed Polyethylene insulated lead free shield wire.

UL AWM style No.	1691
Rating	80°C, 30V

2 Applicable standard

- 2.1 UL subject 758 "Appliance Wiring Material"
USE Wiring of low energy non-hazardous circuits in audio and video equipment.
- 2.2 Electrical Appliance and Material Safety Law.

3 Construction and Material**3.1 Conductor**

- 3.1.1 Material Tinned annealed copper wire (TA) stranded
- 3.1.2 Size see Table 1
- 3.1.3 Stranding see Table 1
- 3.1.4 Diameter see Table 1

3.2 Insulation

- 3.2.1 Material Flame retardant, irradiated cross-linked foamed polyethylene
- 3.2.2 Thickness see Table 1
- 3.2.3 Diameter see Table 1
- 3.2.4 Colour White

3.3 Shielding

- 3.3.1 Material Tinned annealed copper wire (TA)
- 3.3.2 Shield Wire Diameter nom. 0.10 mm
- 3.3.3 Coverage min. 90%
- 3.3.4 Diameter see Table 1

3.4 Jacket

- 3.4.1 Material Heat resistant, lead free PVC
- 3.4.2 Thickness nom. 0.25 mm
ave. 0.22 mm
min. 0.20 mm
- 3.4.3 Diameter see Table 1
- 3.4.4 Jacket colour Grey or brown

4 Properties

- 4.1 Conductor resistance see Table 2
- 4.2 Insulation resistance 1,000 MΩ-km (min.) at 20°C
- 4.3 Dielectric strength A.C.500V/1min.
- 4.4 Capacitance see Table 2
- 4.5 Flammability VW-1SC (UL), -F-Mark

5 Packing

- 5.1 Unit length 305 m
- 5.2 Packing Coil

6 Approved data

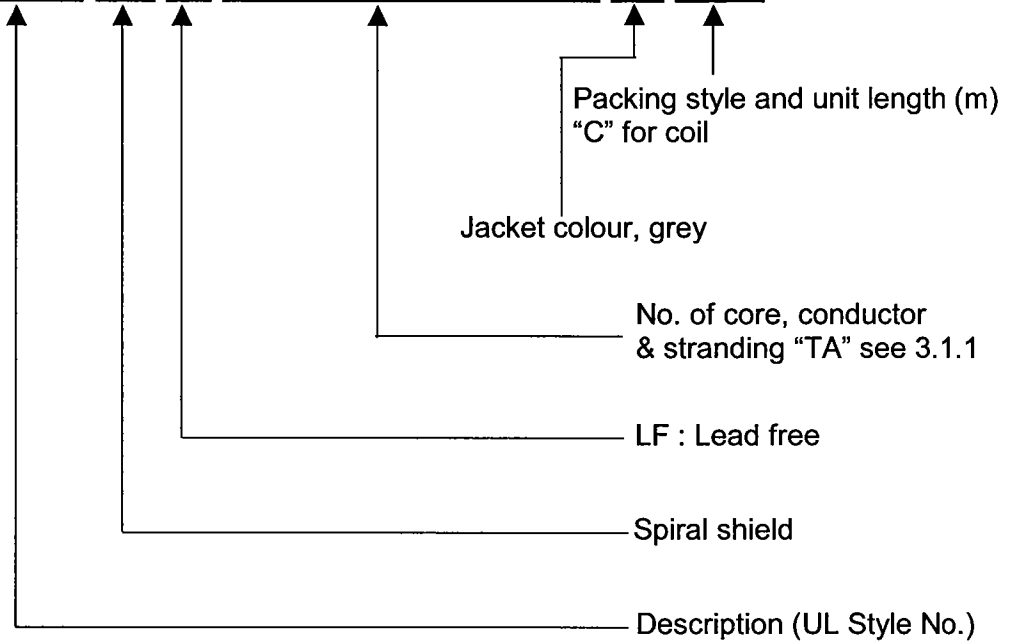
6.1	UL file No.	E41447	
6.2	F mark	F-HCS1-008	
6.3	DENTORI (Temperature)	(Z)023AD0530	
		Approved thickness	0.2 mm
		Approved temperature	80°C

7 Environmental Harmful Substance Compliance

EHSL02019 – Certificate of Compliance for Environmental Harmful Substance*

8 Product description

ex.) UL1691-SW LF 1 x 28AWG 7/0.127TA GY C305



* To be submitted upon request

9 QC Inspection

No.	Test Items	Specification	Standard	Tests		
				Routine*	Periodic*	Approval*
1	No. of conductor strands	see table 1	-	YES	NO	YES
2	Diameter of each strand	see table 1	ASTM B286 UL Subject 758	YES	NO	YES
3	Conductor Elongation	min. 10%	ASTM B286	NO	NO	YES
4	Conductor Overall Diameter	see table 1	-	YES	NO	YES
5	Conductor Resistance	see table 2	ASTM B286	YES	NO	YES
6	Insulation Thickness	see table 1	UL Subject 758	YES	NO	YES
7	Insulation Diameter	see table 1	-	YES	NO	YES
8	Shield Wire Diameter	see table 1	ASTM B286	YES	NO	YES
9	Shield Coverage	refer to 3.3.3	-	YES	NO	YES
10	Shielded Diameter	see table 1	-	YES	NO	YES
11	Jacket Thickness	see table 1	UL subject 758	YES	NO	YES
12	Overall Diameter	see table 1	-	YES	NO	YES
13	Jacket Tensile Strength (unaged)	min. 10.3 Mpa	UL Subject 758	YES	YES	YES
14	Jacket Tensile Strength (aged)	min. 70% (aged at 121°C, 168 hrs)	UL Subject 758	NO	YES	YES
	Jacket Elongation (unaged)	min. 100 %	UL subject 758	YES	YES	YES
16	Jacket Elongation (aged)	min. 65% (aged at 121°C, 168 hrs)	UL Subject 758	NO	YES	YES
14	Insulation Resistance	min. 500 MΩ-km (20°C, 500Vdc)	UL1581	NO	YES	YES
16	Dielectric Strength	No breakdown (500 V for 1minute)	UL1581	NO	YES	YES
17	Correctness of Printing	Refer to Figure 1	-	YES	YES	YES
18	Capacitance	see table 2	-	YES	YES	YES
19	Flame Test	VW-1SC	UL Subject 758	NO	YES	YES

*Note Routine test : QC inspection conducted in every production.
 Periodic test : QC inspection performed once every 3 months.
 Approval test : For product approval purposes.

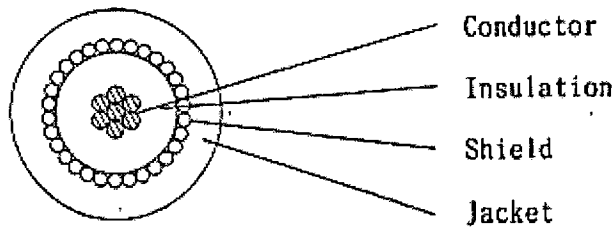
10 Revision Record

10.1 Rev. 0

- Issued date 02/10/00

10.2 Rev. 1

- Amend section 2.2 to "Electrical Appliance and Material Safety Law"
- Amend section 4.5 to "-F-Mark"
- Amend section 6.2 heading to "F mark"
- Additional of section no. 7 Environmental Harmful Substance Compliance



<UL Marking>

"  AWM E41447-HCS STYLE 1691 LF **AWG VW-1SC HITACHI -F-" (Note **: size)

Fig. 1 Wire Diagram

Table 1 : Dimension

Size AWG	Conductor		Insulation		Shielding		Jacket		Approx Weight kg/km
	Stranding No./Nom. mm	Diameter Nom. mm	Thickness* Nom. mm	Diameter Nom. mm	Shield wire diameter Nom. mm	Diameter Nom. mm	Thickness Nom. mm	Diameter mm	
30	7/0.102	0.30	0.22	0.74	0.10	0.94	0.25	1.44 ± 0.10	4
28	7/0.127	0.38	0.285	0.95		1.15		1.65 ± 0.10	5
26	7/0.16	0.48	0.36	1.20		1.40		1.90 ± 0.10	7
24	7/0.203	0.60	0.40	1.40		1.60		2.10 ± 0.15	9

* Insulation thickness - min. ave. : 90% of nom. value
 min. at any point : 80% of nom. value

Table 2 : Electrical Properties

Size (AWG)	Conductor resistance max. (Ω/km) at 20°C	Capacitance at 1 kHz max. (pF/m)
30	354	130
28	223	120
26	139	120
24	85.9	130