




SPEC No.
SP-EH 10015
Rev. 3

SPECIFICATION

FOR

UL, CUL RECOGNIZED HEAT RESISTANT
 LEAD FREE PVC DOUBLE INSULATED WIRES

(UL1617 LF)

WRITTEN	CHECKED	APPROVED
		

MADE IN SINGAPORE

1 Scope

This specification covers UL, CUL (CSA) recognized heat resistant lead free PVC, double insulated wires.

UL AWM style No. 1617
 CSA TYPE AWM Class I, Group A/B
 Rating UL 105°C, 600V

2 Applicable Standard

- 2.1 UL 758 "Appliance Wiring Material"
 USE Internal wiring of electronic equipment
- 2.2 CSA C22.2 .210.2 "Appliance Wiring Material"
- 2.3 Electrical Appliance and Material Safety Law

3 Construction and Material

Description		Specification		
Conductor	Material	Tinned annealed copper wire (TA) stranded		
	Size	See Table 1		
	Stranding			
	Diameter			
Primary Insulation	Material	Heat resistant lead free PVC		
	Thickness(mm)	Nom. 0.81	Ave. 0.76	Min. 0.69
	Dimension	See table 1		
	Colour	White		
Secondary Insulation	Material	Heat resistant lead free PVC		
	Thickness(mm)	Nom. 0.48	Ave. 0.45	Min. 0.40
	Dimension	See table 1		
	Colour	See table 2		
Packing	Unit length	See table 1		
	Style	See table 1		
Approved Data	UL File No.	E41447		
	CUL File No.	E41447		
	F Mark	F-HCS1-002		

4 Environmental Harmful Substance Compliance

- 4.1 EHSL02019 - Certificate of Compliance for Environmental Harmful Substance(SS-00259)*
- 4.2 EHSL05003 - Certificate of Compliance for Environmental Harmful Substance (RoHS)*

*To be submitted upon request

5 Wire Properties

The properties of the wire are as follows.

- 5.1 Conductor Resistance See in Table 1
- 5.2 Insulation Tensile Str. Min 1.05 kgf/mm² (10.3 MPa)
- 5.3 Insulation Elongation Min 100 %
- 5.4 Insulation Resistance Min 15 MΩ-km (20°C)
- 5.5 Dielectric Strength No breakdown (2 KV for 1 min)
- 5.6 Flame Test VW-1(UL); FT1(CSA); -F-(DENAN)

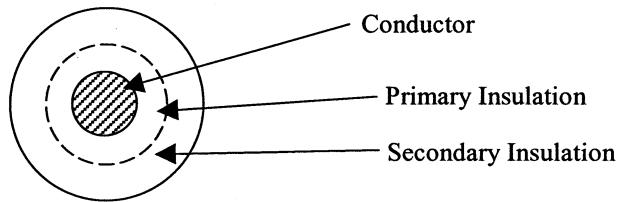
All aging tests are conducted according to UL and CSA standards.

6 Order form

Example

UL 1617 LF 22AWG 17/0.16TA BK C305
 1 2 3 4 5

1	UL1617	Description (UL Style No.)
2	LF	Lead Free
3	22AWG 17/0.16TA	Conductor size & stranding
4	BK	Insulation colour code see table 2
5	C305	Packing style and unit length (m) , "C" for coil, unit length see table 1



<UL & CUL Marking>

“ AWM E41447-HCS 1617 LF **AWG 105C 600V VW-1 AWM I A/B 105C 600V FT1 **AWG HITACHI -F- ” (Note ** :size)

OR

“ AWM E41447-HCS 1617 **AWG 105C 600V VW-1 AWM I A/B 105C 600V FT1 **AWG HITACHI -F- LF” (Note ** :size)

Fig. 1 Cross-section of wire

Table 1 Dimension and Packing Style

Type	Conductor			Primary Insulation		Secondary Insulation		Conductor resistance (at 20°C) Max. Ω/km	Approx. mass kg/km	Unit length Coil m
	Size AWG	Stranding No./mm	Diameter mm	Thickness Nom. mm	Diameter Nom. Mm	Thickness Nom. mm	Diameter mm			
Strand	24	11/0.16	0.61	0.81	2.23	0.48	3.19 ± 0.12	89.8	12.8	305
	22	17/0.16	0.76		2.38		3.34 ± 0.12	58.1	14.7	
	20	26/0.16	0.94		2.56		3.52 ± 0.12	38.3	17.5	
	18	43/0.16	1.21		2.83		3.79 ± 0.12	23.4	22.2	

Table 2 Colour Code

Insulation colour	Colour code	Insulation colour	Colour code
White	WH	Brown	BR
Black	BK	Orange	OR
Red	RD	Grey	GY
Blue	BL	Green	GR
Yellow	YE	Pink	PK
Violet	VI	-	-

Revision Record

Rev. 0

- Issue date 10/10/01

Rev. 1

- Amend section 2.3 to "Electrical Appliance and Material Safety Law"
- Amend section 4.4 to "-F-Mark"
- Amend section 6.3 heading to "F mark"
- Additional of section no. 7 Environmental Harmful Substance Compliance

Rev. 2

- Remove clause 4 and include in revised wire properties table –clause8
- Include new UL surface printing requirement.

Rev. 3

- Change company name
- Include clause 4.2 for RoHS