


# SPECIFICATION

For


heat shrinkable, flexible polyolefin  
tubing (Shrinkage 4:1) used for 600V, 135°C.

Type designation : GSHS-4635

PREPARED BY

  
MIN - GYU KANG

APPROVED BY

  
HO - WON JANG  
General Manager

## 1. Scope

This specification covers the requirements for heat shrinkable, flexible polyolefin tubing (Shrinkage 4:1) used for 600V, 135°C. (Type designation : GSHS-4635)

## 2. Reference Standard

The following documents form a part of this specification to the extent specified herein.

UL 224 : Extruded insulating tubing

CSA C22.2 N0.198.1-M1986 : Extruded insulating tubing

MIL-I-23053/5 class1 overexpanded: Insulation, Electrical, Heat Shrinkable,  
Polyolefin, Flexible, Crosslinked

## 3. Standard

The insulation shall be a flexible irradiated cross-linked polyolefin complying with UL & CSA(125°C), MIL 135°C class I/III specification. Expanded inside diameter and recovered thickness at any point of insulation shall be in the attached table 1. The standard colors of insulation are Black, White, Red, Yellow, Blue, Green, Gray, Brown and Violet.

## 4. Applied Recipe

The used material of insulation is in the attached table 2.

## 5. Performance

The following item shall be carried out in accordance with MIL,UL 224 & CSA

Test Item	Characteristics	Test condition
Expanded inside diameter	Attached table 1	-
Recovered inside diameter	Attached table 1	-
Recovered thickness at any point	Attached table 1	-

Test Item	Characteristics	Test condition
Unaged	Tensile strength	Room temp.
	Elongation	
Aged	Tensile strength	175°C/7 days
	Elongation	
Voltage withstand and breakdown Voltage(Unaged)	Withstand 2.5kV for 1minute and breakdown	Room temp.
Voltage withstand and breakdown Voltage(Aged)	Withstand 2.5kV for 1 minute and breakdown at least half of unaged breakdown voltage	158°C/7 days
Copper corrosion	No corrosion of bare copper	175°C/16 hours
Copper stability	No sign of degradation Min. Elongation 100%	158°C/7 days

Flammability		Pass	ASTM D 2671 Procedure B/C
Cold bend		No crack	-55°C/4 hours
Maximum secant modulus(2%)		17.59 kgf/mm <sup>2</sup>	-
Restricted shrinkage		No crack	175°C/30 minutes
Fluid resistance * Refer to below test fluid	Tensile Strength	Min. 0.70	24°C/24 hours
	Dielectric Strength	Min. 15.8kv/mm	24°C/24 hours
Fungus resistance		No growth	-
Water absorption		Max. 0.5%	-
Volume resistivity		Min. 10 <sup>14</sup> Ω-cm	-
Heat shock		No crack	250°C/4 hrs
Restricted recovery		No split, withstand 2.5kV for 1minute	180°C/30 minutes

※ Test fluid

Fluid	Conforming to
Hydraulic fluid petroleum base JP-8 Lubricating oil Lubricating oil 5 percent NaCl Deicing fluid	MIL-H-5606 MIL-T-5624 MIL-L-7808 MIL-L-23699 A-A-694 MIL-A-8243

Restricted Hazardous Substances	Characteristics	Test Method
Pb	Max. 100	EPA 3050B or EN1122,ICP-AES
Cd	Max. 5	EPA 3050B, ICP-AES
Hg	N.D	EPA 3052, ICP-AES
Cr6+		EPA 3060A
PBBs	Max. 100	With reference to 83/264/EEC and 2003/11/EEC. GC/MS
PBDEs		

Ref) N.D : Not detected

6. Storage condition

Keep cool. Don't expose tubes to the direct rays of sun to prevent natural shrinkage and don't keep this package over 8 hours at temperature exceeding 40°C(104F)

Attached Table 1.

Standard Size (Metric size)	팽창후(Expanded)		수축후(Recovered)		Standard Length [m]
	Inside Diameter [mm]	Nominal Thickness [mm]	Max. Inside Diameter [mm]	Min. Thick. At any point [mm]	
0.35T X 12.0 mm	12.5 ± 0.5	0.30	3.00	0.960	1.2
0.35T X 19.0 mm	19.8 ± 0.7	0.35	4.70	0.960	1.2
0.35T X 25.4 mm	26.2 ± 0.8	0.35	7.00	0.960	1.2
0.40T X 32.0 mm	33.0 ± 1.0	0.40	8.00	0.960	1.2
0.40T X 38.0 mm	38.0 ± 2.0	0.40	9.50	0.960	1.2

Attached Table 2.

MATERIAL IDENTIFICATION	IDENTI. No	LSCGBT-990301
	ISSUED DATE	Aug. 28. 2008

NOMENCLATURE	HEAT-SHRINKABLE POLYOLEFIN TUBE	
TYPE & STYLE	GSHS-4635	
BRIEF DESCRIPTION	RATING	600V, 135°C
	DESCRIPTION OF RAW MATERIAL	1) MATERIAL OF COMPOUND ; Flexible Heat Shrinkable polyolefin 2) MANUFACTURER OF COMPOUND
REMARKS	REFERENCE SPECIFICATION : UL 224 & CSA, MIL-I-23053/5 UL File No.: E153276	

WE CERTIFY THAT THE ABOVE MENTIONED MATERIAL HAS BEEN USED

LS Cable Ltd.



General Manager H. W. Jang