

# SPECIFICATION

For

moisture proof, heat shrinkable, flexible polyolefin tubing  
(Shrinkage 3:1)

Type designation : GSHS-3635W  
GSHS-3635W-E

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PREPARED BY Kim Bo Su  
Bo - Su Kim  
Assistant Manager

REVIEWED BY Kang Min Gyu  
Min - Gyu Kang  
Deputy general Manager

APPROVED BY Han Sang Ok  
Sang - Ok Han  
General Manager

## 1. Scope

This specification covers the requirements for moisture proof, heat shrinkable, flexible polyolefin tubing (Shrinkage 3:1).

(Type designation : GSHS-3635W, GSHS-3635W-E)

## 2. Reference Standard

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

UL 224 : 600V, 125°C, Flexible, Heat shrinkable polyolefin tubing with meltable liner

AS 23053/4 class III : Insulation sleeving, Electrical, Heat shrinkable, Polyolefin,

Dual-wall, Outer wall crosslinked, Operating temperature range -55°C to 110°C

RoHS Directives

## 3. Standard

## 3-1.Outer jacket

The insulation shall be a flexible irradiated cross-linked polyolefin complying with UL & AMS 135°C 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, Clear, Brown and Violet.

Operating temperature range : -55°C~135°C

## 3-2.Inner adhesive

The inner adhesive shall be coated to inner surface of outer jacket.

Upon application of heat over 110°C, the inner adhesive melts and flows.

## 4. Performance

The following item shall be carried out in accordance with UL 224 & AS 23053/4 class3 specification.

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	-
Unaged	Tensile strength	Min. 1.06 kgf/mm <sup>2</sup>	Room temp.
	Elongation	Min. 200%	
Aged	Tensile strength	More than 75% of unaged value	158°C/7 days
	Elongation	Min. 100 %	
Voltage withstand and breakdown Voltage(Unaged)		Withstand 2.5kV for 1minute and breakdown	Room temp.

Copper corrosion		No corrosion of bare copper	175°C/16 hours
Copper stability		No sign of degradation Min. Elongation 100%	158°C/7 days
Cold bend		No crack	-55°C/4 hours
Fluid resistance * Refer to below Test fluid	Tensile strength	Min. 0.7 kgf/mm <sup>2</sup>	24°C/24 hours
	Dielectric strength	Min. 7.9 kv/mm	24°C/24 hours
Fungus resistance	Tensile strength	Min. 1.06 kgf/mm <sup>2</sup>	ISO 846
	Elongation	Min. 250%	
	Dielectric strength	Min. 11.8 kv/mm	
Water absorption		Max. 0.5%	-
Volume resistivity		Min. 10 <sup>14</sup> Ω-cm	-
Heat shock		No crack	250°C/4 hrs
Longitudinal change (Only 1/2 inch size)		-10% ~ +1%	200°C/3 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		With reference to 83/264/EEC and 2003/11/EEC. GC/MS
PBDEs		

N.D : Not detected

## 5. 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]	Max. Inside Diameter [mm]	Min. Jacket thickness [mm]	
0.53T X 3.0 mm	3.3 ± 0.3	1.00	0.44	1.2
0.40T X 4.0 mm	4.3 ± 0.3	1.33	0.44	1.2
0.48T X 4.5 mm	4.8 ± 0.3	1.50	0.56	1.2
0.45T X 5.0 mm	5.7 ± 0.3	1.70	0.56	1.2
0.45T X 6.0 mm	6.3 ± 0.3	2.00	0.56	1.2
0.48T X 7.0 mm	7.4 ± 0.3	2.40	0.56	1.2
0.50T X 9.0 mm	9.8 ± 0.5	3.00	0.56	1.2
0.55T X 12.0 mm	12.8 ± 0.5	4.00	0.56	1.2
0.50T X 16.0 mm	16.8 ± 0.5	5.30	0.56	1.2
0.77T X 19.0 mm	20.0 ± 1.0	6.00	0.69	1.2
0.78T X 24.0 mm	25.1 ± 1.0	8.00	0.77	1.2
0.90T X 27.0 mm	28.0 ± 1.0	11.00	0.77	1.2
0.80T X 31.0 mm	33.0 ± 2.0	11.00	0.77	1.2
<b>0.80T X 32.0 mm</b>	<b>34.0 ± 2.0</b>	<b>11.00</b>	<b>0.77</b>	<b>1.2</b>
0.76T X 38.0 mm	41.0 ± 3.0	13.00	0.87	1.2
<b>0.76T X 39.0 mm</b>	<b>42.0 ± 3.0</b>	<b>13.00</b>	<b>0.87</b>	<b>1.2</b>

Standard Size (Inch size)	팽창후 (Expanded)	수축후(Recovered)		Standard Length [m]
	Inside Diameter [mm]	Max. Inside Diameter [mm]	Min. Jacket thickness [mm]	
0.53T X 1/8"	3.4 ± 0.3	1.00	0.44	1.2
0.48T X 3/16"	5.1 ± 0.3	1.50	0.44	1.2
0.45T X 1/4"	6.7 ± 0.3	2.00	0.56	1.2
0.50T X 3/8"	9.9 ± 0.4	3.00	0.56	1.2
0.50T X 1/2"	13.3 ± 0.6	4.20	0.56	1.2
0.77T X 3/4"	20.1 ± 1.0	6.00	0.69	1.2
0.70T X 1"	26.4 ± 1.0	8.00	0.69	1.2
0.76T X 1.5"	39.0 ± 1.0	13.00	0.87	1.2