



WHA YU INDUSTRIAL CO., LTD.(HEAD OFFICE)
 DONGGUAN AEON TECH CO.,LTD.(CHINA)
 SUZHOU AEON TECH CO.,LTD.(CHINA)
 AEON TECH (SHANGHAI) CO.,LTD(CHINA)
 DONGGUAN PARNER TECH CO.,LTD.(CHINA)

SPECIFICATION FOR APPROVAL

CUSTOMER: 明泰科技股份有限公司 產地: 大陸吳江市。東莞市
PART NAME: RF Antenna Cable Assembly 產品單重:19248mg
PART NO.: **REVISION:**
W. Y. P/NO.: C037-511078-A (SSR-211352) **REV.:** X1

	MANUFACTURER SIGNATURE	CUSTOMER SIGNATURE
APPROVED BY :	陳達	
DATE :	10' 5. 1	

WHA YU GROUP

WHA YU INDUSTRIAL CO., LTD.(HEAD OFFICE)

華裕實業股份有限公司

Address: No. 326, Sec. 2, Kung Tao 5 Road, Hsin Chu City, Taiwan, R.O.C.

Tel:+886-3-5714225(REP.) Fax:+ 886-3-5713853 · + 886-3-5723600

DONGGUAN AEON TECH CO.,LTD.(CHINA)

東莞台霖電子通訊有限公司

Address:Hupan Industrial District,Tai Ling Shan Town,Dong Guan City,Guangdong,China

Tel:+86-769-85655858 Fax:+86-769-85655258

SUZHOU AEON TECH CO.,LTD(CHINA)

蘇州華廣電通有限公司

Address:Limin North Road, LiLi Town,LiLi Industrial Park,LinHu Economic Zone

Wujiang City,Jiangsu Province,China

Tel:+86-512-63627980 Fax:+86-512-63627981

AEON TECH (SHANGHAI) CO.,LTD(CHINA)

普翔電子貿易(上海)有限公司

Address:Flat 501,5F,Build 27, NO.68,Guiqing Road, Huhui District, Shanghai,China

Tel:+86-21-64959151 Fax:+86-21-64959059

DONGGUAN PARNER TECH CO.,LTD.(CHINA)

東莞倍能電子有限公司

Address:Hupan Industrial District, Shida Road, Tai Ling Shan Town,

Dong Guan City, Guangdong, China

Tel:+86-769-81662366 Fax:+86-769-81602681

Contents

<i>Item</i>	<i>Description</i>	<i>Page</i>
1.	規格表	..... 1
2.	成品圖	..... 2
3.	上下固零件圖	..... 3~4
4.	BOM List	..... 5
5.	測試報告	..... 6~8
6.	Cable 規格/UL	..... 9~13
7.	杆套及固定座材質特性/ UL	..... 14~22
8.	熱縮套管材質特性/ UL	..... 23~30
9.	樣品檢驗記錄表	..... 31
10.	樣品圖	..... 32

RF Antenna Assembly

Specification

1. Electrical Properties :

- 1.1 Frequency Range..... 2.4GHz ~ 2.5GHz
- 1.2 Impedance 50Ω Nominal
- 1.3 VSWR 1.92 : 1 Max.
- 1.4 Return Loss..... -10 dB Max.
- 1.5 Radiation Omni-directional
- 1.6 Gain(Peak)..... 4.0dBi (excluding cable loss)
- 1.7 Cable Loss..... 0.5dB Max.
- 1.8 Polarization..... Linear
- 1.9 Admitted Power..... 1W
- 1.10 Cable..... ϕ1.13 Coaxial Cable

2. Physical Properties :

- 2.1 Antenna Base..... TPE
- 2.2 Antenna Base..... PC
- 2.3 Antenna Base..... PC
- 2.4 Operating Temp. -10°C ~ +60°C
- 2.5 Storage Temp. -10°C ~ +70°C
- 2.6 Color Black

A		B		C		D		E		F		G	
REV		DATE		DESCRIPTION									
X1		05/11-2010		New Issue									

Detail A

Tin Plated

GP 標籤貼於紙箱兩側左上角(共2PCS)
外箱貼1PCS標籤於左上角
成品淨重:19248±5%mg

PE Bag
Shrink Line
GP環保標簽
Label

(5 pcs/bundle)
Packing : 10 pcs/bag

CUSTOMER'S SIGNATURE

NO	DESCRIPTION	QTY	REMARK
5	Cable	1	Φ1.13mm Cable, Gray, 50Ω
4	Rivet	2	POM, Color: Black
3	Antenna Base	1	(CD-554)PC, Color: Black
2	Antenna Base	1	(CD-384)PC, Color: Black
1	Antenna Body	1	(CD-383)TPE, Color: Black

APPROVED		CUSTOMER:	
XX. ±5.0	明 泰	PART NO :	
X. ±3.0		PART NAME:	RF Antenna Cable Assembly
.X ±1.0		W.Y P/NO :	C037-511078-A
.XX ±0.5		REV	UNIT
XXX ±0.1		FILE	SSR-211352
☉		SHEET	1/1

Wha Yu Group

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謹裕實業股份有限公司

WHA YU INDUSTRIAL CO., LTD

BILL OF MATERIAL

CUSTOMER P/N: 明泰科技股份有限公司

DATE:2010.05.12

W.Y.P/N:C037-511078-A

PART NO:SSR-211352

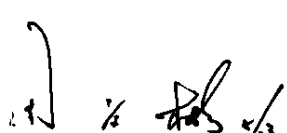


PART NAME:RF Antenna Cable Assembly

REV:X1

序號	零件名稱	供應商	規格描述	UL 防火等級
1	Cable	EVERNEW	Φ1.13mm Coaxial Cable,Gray,50Ω,鍍錫線	60.80℃.30V
2	Antenna Body	CHANG CHUN	(CD-383)TPE;Pantone Process Black C(W.Y-002)	HB
3	Antenna Base	CHI MEI	(CD-384)PC;Color:Black C(W.Y-002)	V-2
4	Antenna Base	DYNACHEM	(CD-554)PC;Color:Black C(W.Y-002)	V-2
5	Rivet	YINGFENG	POM;Black	—
6	Signal Tube	FOSHAN HUARU(冠東)	ψ4.5* 22mm;Brass;For Helixψ1.2線徑;Plating Tin	—
7	Ground Tube	FOSHAN HUARU(冠東)	ψ6.8×23mm;底塞ψ7.2×0.5mm;Brass & POM;Plating Ni	—
8	Helix	JMS	ψ1.2× 3.5T;OD:5.9;F:30;B:51;P:4;Phosphor Bronze	—
9	泡棉	TONAXIANG	ψ6.0*5.0mm . Black	—
10	Core	KING CORE	K5B;RH 4*10*2mm	—
11	H.S Tube	HAMBURG	H.S.Tube:W3F2 1/4" UL/CSA ID6.4*22mm	125℃.150V
12	H.S Tube	WOER	H.S.Tube:W3F2 1/4" UL/CSA ID6.4*22mm	105℃.600V

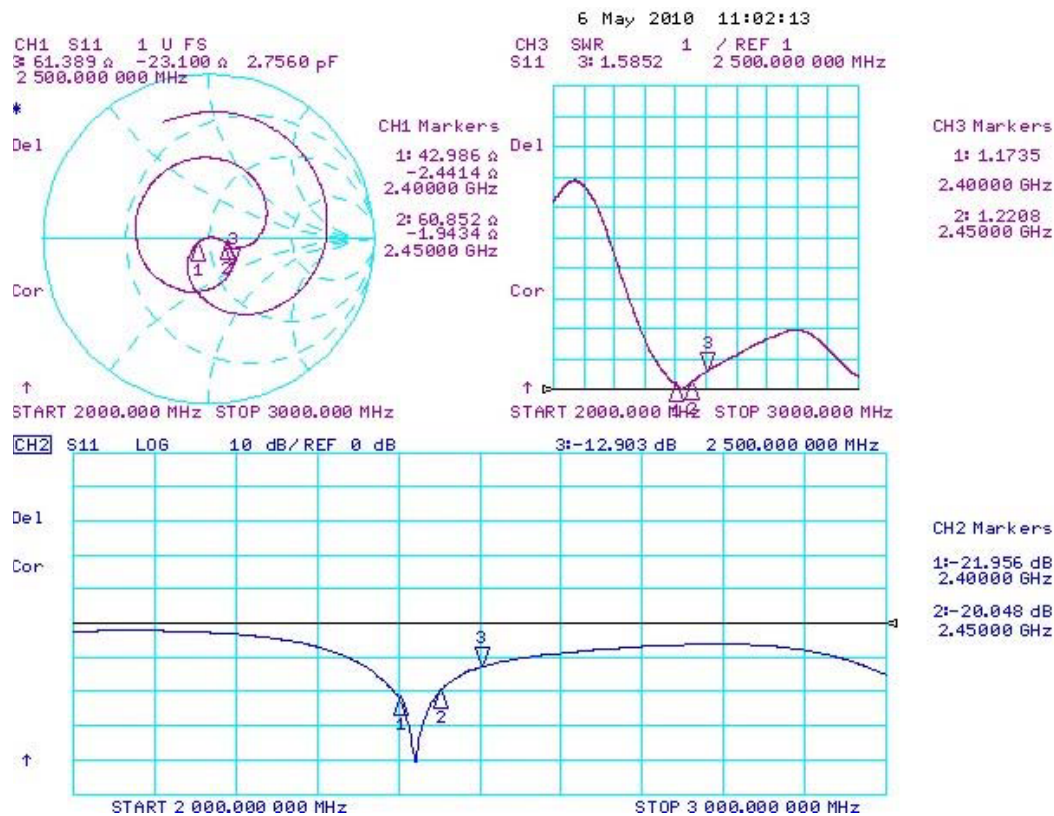
變更履歷:

序號	變更依據	變更內容	變更日期	版本

核 準		審 核		制 作	
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工程部門未經許可"不得複印"

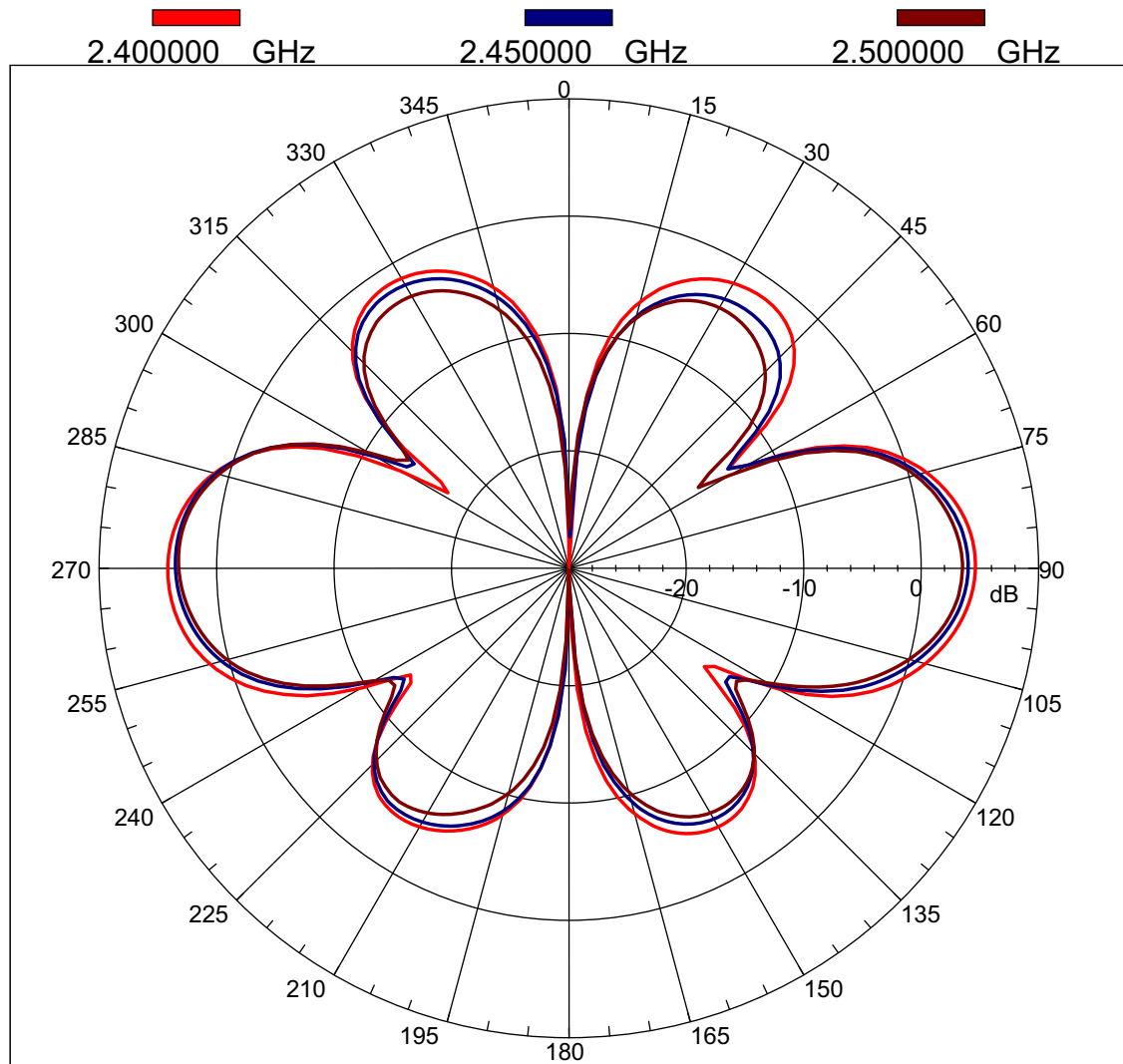
RF Antenna Cable Assembly P/NO : C037-511078-A SPEC : 2.4~2.5GHz



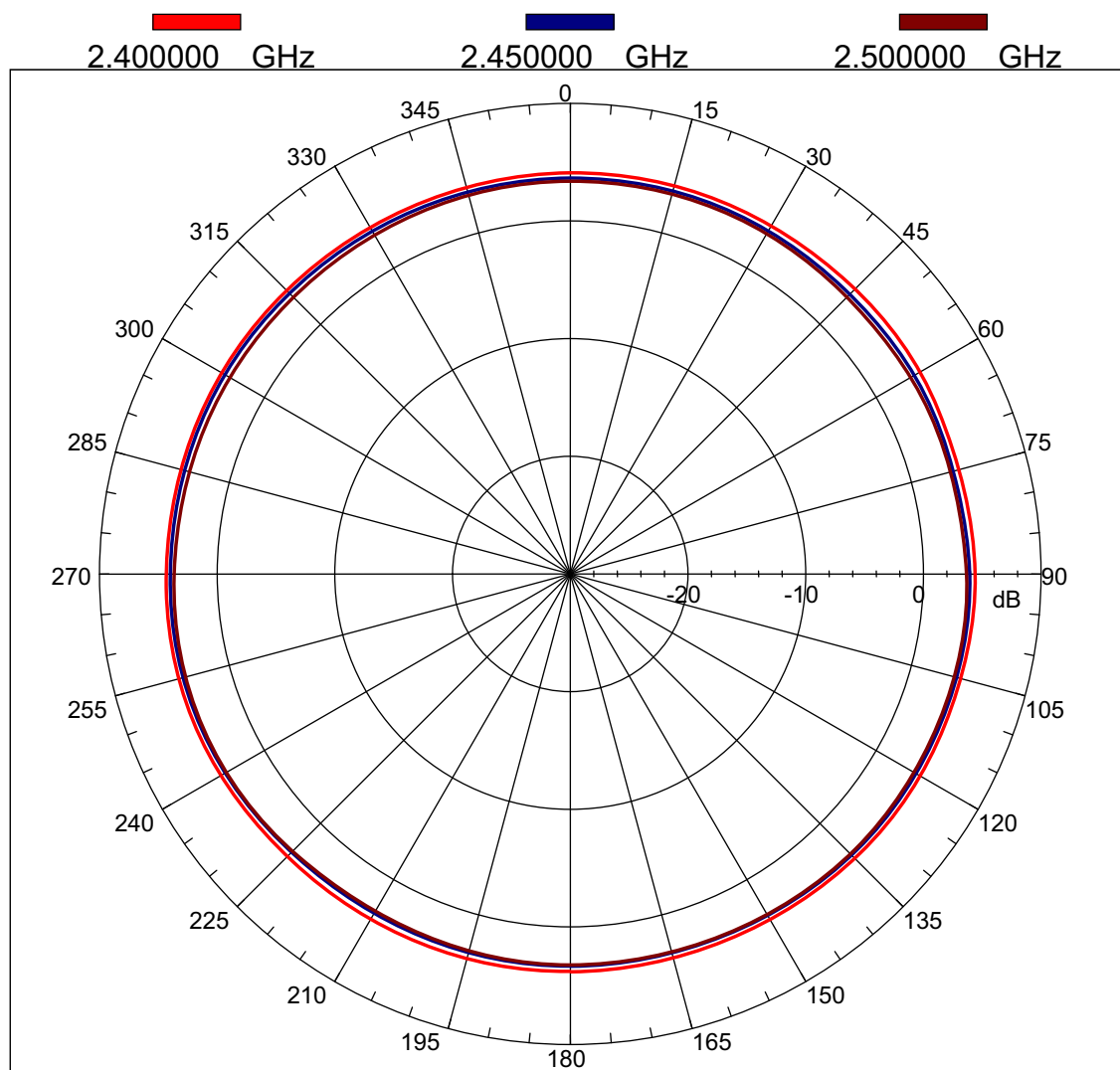


Wha Yu
Group

Far-field amplitude of C037-511078-A SSR-211352E-PLANE.nsi



Far-field amplitude of C037-511078-A SSR-211352H-PLANE.nsi





EVERNEW WIRE & CABLE CO.,LTD.

6,Shang Shing Rd.,Shang Jeau Industrial District,
Chang An Town,Dongguan,Guangdong,China

Tel:86-769-5411045

Fax:86-769-5540257

APPROVED	CHECKED	ENGINEER
ELI	QF	ZQY

APPROVED BY CUSTOMER:_____

DOCUMENT NO. RF

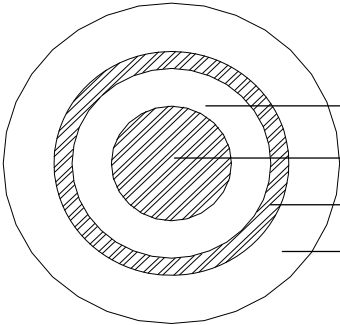
REVISION NO. B/0

Product Specifications

DATE: 07-10-2009

Construction & Material		Guests Part No.	
Item		Unit	Specification
Product			RF
Conductor	Size	mm	32
	Number	C	1
	Material		Silver-Gilt Copper
	Construction	pcs / mm	7/0.084±0.005
	Diameter	mm	0.26
Insulation	Material		FEP
	Nom.thickness	mm	0.22
	Overall Diameter	mm	0.68±0.05
	Color		Transparent
Braiding	Material		Stranded Tinned Copper
	Construction	mm	4/0.05/16
Jacket	Material		FEP
	Nom.thickness	mm	0.12
	Overall Diameter	mm	1.13+0.1/-0.06
	Color		By Order
Marking	None Marking		

Cross - Section View :



FEP

Conductor

Braiding

Jacket

NOTE : Please confirmed in two days , Or we will take it as confirmed.

FORM NO. EW-FOR-009C,C/1

電 氣 性 能		
特性阻抗	50±2(TDR,250ps &500ps)	Ω
耐電壓 A.C	0.5/1	KV/min
最小絕緣電阻	1000(650V D.C)	MΩ-km
Attenuation(min)	Frequency(GHZ)	dB/m
	1.0	-2.2
	2.0	-3.0
	2.4~2.5	-3.3
	3.0	-3.9
	4.0	-4.8
	4.8~6.0	-5.3
反射損失(max)	2.4G~2.5G	-20dB/m
	4.8G~6.0G	-15.5dB/m



AVLV2.E138922 Appliance Wiring Material - Component

[Page Bottom](#)

Appliance Wiring Material - Component

[See General Information for Appliance Wiring Material - Component](#)

EVERNEW WIRE & CABLE CO LTD

E138922

5TH FL

111 KEELUNG RD, SEC 2

TAIPEI, TAIWAN

Table of Recognized Styles					
Single-conductor, thermoplastic insulation.					
1007	1185	1208	1365	1533	1792
1061	1195	1354	1503	1777	
Multiple-conductor, thermoplastic insulation.					
2464	2725	2854	2960	20276	
2562	2835	2919	2990		

Marking: Company name, voltage rating, temperature rating, conductor size, conductor material if other than copper, and use.
[Last Updated](#) on 2008-10-23

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UNDERWRITERS LABORATORIES

APPLIANCE WIRING MATERIAL

Subj.758

Section 1

Page 1354

Issued:1964-02-19

Revised:2009-04-30

Style 1354

Coaxial Cable.

Rating	60, 80 deg C, 30 Vac, Horizontal flame.
--------	---

Conductor	44 AWG min., material not specified.
-----------	--------------------------------------

Insulation	2 mils minimum at any point, 125 mils maximum. The insulation may be: Extruded solid or cellular PE, FRPE, PP, PFA, FEP, ECTFE, PTFE, ETFE, or combination thereof with or without irradiation; or tape wrapped solid or cellular PTFE, PFA, or FEP. Applied as a spiral wrapped thread (5 mils minimum, 40 mils maximum) and enclosed in a tube of insulation.
------------	---

Assembly	Insulated conductor with optional inner covering, optional inner shield, optional middle covering, required outer shield and required outer covering.
----------	---

Shield	Optional. Outer Shield required.
--------	----------------------------------

Covering	Optional Inner Covering - Extruded PVC, PFA, Polyamide, Polyester, PVDF, FEP, PTFE, ECTFE, ETFE, PE, XLPE, XLFRPE or FRPE; lacquered braids; heat sealed PTFE, PFA or FEP tape; Polyester or Polyester-Polyethylene film. Thicknesses not specified. Optional Middle Covering - Extruded PVC, PFA, PP, Polyamide, Polyester, PVDF, FEP, PTFE, ECTFE, ETFE, PE, XLPE, XLFRPE or FRPE; lacquered braids; heat sealed PTFE, PFA or FEP tape; Polyester or Polyester-Polyethylene film. Thicknesses not specified. Required Outer Covering - Extruded Irradiated PE, Irradiated PVC, Polyurethane, PVC, PFA, PP, Polyamide, Polyester, PVDF, FEP, PTFE, ECTFE, ETFE, PE, XLPE, XLFRPE or FRPE; lacquered braids; heat sealed PTFE, PVC, PFA or FEP tape; Polyester or Polyester-Polyethylene film. Thicknesses not specified.
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Standard	Appliance Wiring Material UL 758.
Marking	General.
Use	Internal wiring of Class 2 circuits of electronic equipment or as insulated single in jacketed multiconductor cables.



Thermoplastic polyester Elastomer

1155LL

1155LL is medium modulus grade with nominal Durometer hardness of 55D. It contains non-discolour stable antioxidants. It can be processed by thermoplastic processing techniques like injection molding and extrusion molding grade.

CHARACTERISTICS

1. Excellent medium modulus for injection and extrusion molding grade.
2. Excellent flexibility and fatigue resistance.
3. Excellent creep resistance.
4. Excellent low shrinkage and higher melting temperature

SPECIFICATIONS

Property		Test condition	Units	1155LL
Mechanical	Tensile Strength	ISO 527	MPa	24
	Tensile modulus	ISO 527	MPa	421
	Tensile Elongation	ISO 527	%	466
	Flexural Modulus	ISO 178	MPa	124
	Hardness, Shored	ISO 868	D scale	55
	Notched Charpy Impact Strength	ISO 179/1eA	KJ/m ²	NO BREAK
Thermal	Melting Point By DSC	ISO 3146C	°C	209

Rheological	Melting Flow Index	ISO 1133 2.16 Kg at 230 °C	g/10 min	30
Electrical	Volume Resistivity	IEC 60093	Ohm cm	2.13 E 13
	Dielectric Strength	IEC 60243-1 Thickness=2mm	KV/mm	16.80
	Surface Resistivity	IEC 60093	ohm	3.57 E 13
Physical	Specific Gravity	ISO 1183	g/cm ³	1.193
	Water Absorption	ISO 62 Immersion 24hrs	%	0.4
	Mold Shrinkage	ISO 294-4	%	0.65

* The information provided in data sheet corresponds our knowledge and experience on the subject of its publication. The information provided within the normal condition of product property becomes available, these data may not be valid for such material used in combinations with any material or in any process.

INJECTION OPERATION

1.Drying :

CCP TPEE must be dried prior to processing. It is critical to ensure that the resin is dry during processing to make quality parts that would give good service performance. Moisture levels above 0.10% may seriously impair an injection operation.

Drying time and temperature will depend on the initial moisture level in the material (often is 0.3-0.6%) , so we suggest the drying condition : 105°C/3-5hours.

2.Condition of Injection :

		1155LL
Normal Melting Point* ¹ (°C)		209
Typical Injection Temperature (°C)	Rear	210-230
	Center Rear	220-250
	Front	220-250
	Nozzle	220-250
	Mold	20-50
Screw speed (rpm)		40-80
Pressure (kg/cm ²)	Injection pressure	300-1000
	Holding pressure	50-400
Injection time (sec)		2-10
Holding pressure time (sec)		10-30

* 1.Differential scanning calorimeter(DSC)peak of endothermic

CHANG CHUN PLASTICS CO LTD

7TH FL, 301 SOHNGIANG RD, TAIPEI 104 TW

1155

Thermoplastic Polyester Elastomer (TPEE), furnished as pellets

Color	Min Thick (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str
NC, BK	0.8	HB	4	0	50	50	50
	3.0	HB	3	0	50	50	50

Comparative Tracking Index (CTI): 0

High-Voltage Arc Tracking Rate (HVT): 0

Dielectric Strength (kV/mm): -

Dimensional Stability (%): -

High Volt, Low Current Arc Resis (D495): 3

Volume Resistivity (10⁸ ohm-cm): -

ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

Report Date: 2009-06-24

Last Revised: 2009-07-01

Underwriters Laboratories Inc®



IEC and ISO Test Methods

Test Name	Test Method	Units Class (color)	Thickness Tested (mm)	Value
Flammability	IEC 60695-11-10		0.8	HB75 (HC, BK)
			3.0	HB40 (HC, BK)
Glow-Wire Flammability (GWFI)	IEC 60695-2-12	C	-	-
Glow-Wire Ignition (GWIT)	IEC 60695-2-13	C	-	-
IEC Comparative Tracking Index	IEC 60112	Volts (Max)	-	-
IEC Ball Pressure	IEC 60695-10-2	C	-	-
ISO Heat Deflection (1.80 MPa)	ISO 75-2	C	-	-
ISO Tensile Strength	ISO 527-2	MPa	-	-
ISO Flexural Strength	ISO 178	MPa	-	-
ISO Tensile Impact	ISO 8256	kJ/m ²	-	-
ISO Izod Impact	ISO 180	kJ/m ²	-	-
ISO Charpy Impact	ISO 179-2	kJ/m ²	-	-

Underwriters Laboratories Inc®



WONDERLITE® PC-110 代表物性：

June 9, 2004, v2.0

特性	試驗法	單位	試驗條件	PC-110
流動係數 Melt Flow Index	ASTM D1238	g/10min	300°C, 1.2 kg	10
比重 Specific Gravity	ASTM D792	-	23/23°C	1.20
吸水率 Water Absorption (immersion)	ASTM D570	%	24hr at 23°C	0.20
全光穿透率 Light Transmission	ASTM D1003	%	3 mm thick	89
濁度 Haze	ASTM D1003	%	3.2 mm thick	< 0.8
折射率 Refractive Index	ASTM D542	-	-	1.585
引張強度，降伏點 Tensile Strength at Yield	ASTM D638	Kg/cm ²	23°C	630
延伸率 Tensile Elongation	ASTM D638	%	23°C	6
			23°C	110
彎曲強度 Flexural Strength	ASTM D790	Kg/cm ²	23°C	920
彎曲模數 Flexural Modulus	ASTM D790	Kg/cm ²	23°C	24000
Izod 缺口衝擊強度 Izod Impact Strength (Notched)	ASTM D256	Kg · cm/cm	1/4"	14.3
			1/8"	87
洛式硬度 Rockwell Hardness	ASTM D785	M Scale	-	M-77
壓縮強度 Compressive Strength	ASTM D695	Kg/cm ²	-	780
熱變形溫度，未退火 Heat Distortion Temperature (unannealed)	ASTM D648	°C	4.6 Kg/cm ² , 120°C/hr	136
			18.6 Kg/cm ² , 120°C/hr	125
軟化點 Vicat Softening Temperature	ASTM D1525	°C	1 Kg, 50°C/hr	153
線膨脹係數 Coefficient of Linear Expansion	ASTM D696	x10 ⁻⁵ cm/cm/°C	40~100°C	6~8
熱傳導率 Thermal Conductivity	ASTM C177	W/m°C	-	0.2
成型收縮率 Mold Shrinkage	ASTM D955	%	流動方向 parallel	0.5-0.7
			垂直方向 across	0.5-0.7
燃燒率 Flammability	UL 94	1/16"	-	V-2
體積電阻率 Volume Resistivity	ASTM D257	x10 ¹⁶ Ω · cm	-	3
介電常數 Dielectric Constant	ASTM D150	-	60 Hz	2.95
			10 ⁶ Hz	2.9
介電損失 Dielectric Dissipation Factor (tan δ)	ASTM D150	-	60 Hz	0.0004
			10 ⁶ Hz	0.009
絕緣破壞強度 Dielectric Breakdown Strength	ASTM D149	kV/mm	1.6mm	30
耐電弧性 Arc Resistance (Tungsten electrode)	ASTM D495	sec	-	110
產品特性 / 主要應用 Characteristics/Principal Applications				中黏度 Medium Viscosity

請注意：上表數據僅供參考用。



QMFZ2 Component - Plastics

Wednesday, September 21, 2005

E214362

CHIMEI-ASAHI CORPORATION

36 KAIFA 4TH RD RENDE SHIANG TAINAN TW

Material Designation: **PC-110+**

Product Description: Polycarbonate (PC), designated "Wonderlite" furnished as pellets.

Color	Min. Thick. (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str	IEC GWIT	IEC GWFI
ALL	1.5	V-2	2	4	125	105	125	-	-
ALL	2.5	V-2	2	3	125	105	125	-	-
ALL	3.0	HB	2	3	125	105	125	-	-

CTI: 2 IEC CTI (V): - HVTR: 2 D495: 6 IEC Ball Pressure (°C): -

Dielectric Strength (kV/mm): - Volume Resistivity (10^xohm-cm): - Dimensional Stability(%): -
ISO Tensile Strength (MPa): - ISO Flexural Strength (MPa): - ISO Heat Deflection (°C): -
ISO Tensile Impact (kJ/m²): - ISO Izod Impact (kJ/m²): - ISO Charpy Impact (kJ/m²): -

+ Prefix or suffix optional, may be used to denote 0-0.5 percent acid scavengers.

Report Date: 9/25/2001

Underwriters Laboratories Inc®

UL94 small-scale test data does not pertain to building materials, furnishings and related contents. UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in components and parts of end-product devices and appliances, where the acceptability of the combination is determined by ULI.

台化PC樹脂#2200符合UL及環保規定之檢驗規範

下載參考文件請點選：[加工建議參數](#) [物質安全資料表](#) [UL認證](#) [環保證明](#)



台化聚碳酸酯(PC)膠粒物性彙總表

TARFLON PC (Polycarbonate) general properties data sheet

項 目 Property	試驗方法 Test Method	單 位 Unit	# 2 2 0 0
<u>物理性質 Physical Properties</u>			
密度 Density	ISO1183	kg/m ³	1.20 × 10 ³
熔融指數 Melt Flow Index (300°C, 1.2kg)	ISO1133	g/10 min	12
吸水率 Water adsorption	ISO 62	%	0.23
<u>機械性質 Mechanical Properties</u>			
抗張強度 Tensile strength at Yield	ISO 527	Mpa	65
斷張強度 Tensile strength at break	ISO 527	Mpa	65
斷 張率 Elongation at break	ISO 527	%	95
張力模數 Tensile modulus	ISO 527	Mpa	2000
彎曲強度 Flexural strength	ISO 178	Mpa	90
彎曲模數 Flexural modulus	ISO 178	Mpa	2300
Charpy衝擊強度 Charpy impact strength(1eA)	ISO 180	kJ/m	80
I洛氏硬度 Rockwell Hardness	ISO 2039-2	R, M-scale	R120, M50
<u>熱學性質 Thermal Properties</u>			
HDT 熱變形溫度 Heat deflection temperature (18.6 kg/cm ²)	ISO 75-1	°C	125
成型收縮率 Mold Shrinkage	ASTM D 955	%	0.5~0.7
線膨脹係數 Linear expansion factor	ASTM D 696	cm/cm/°C	6.5 × 10 ⁻⁵
<u>電氣性質 Electrical Properties</u>			
絕緣強度 Dielectric strength (1.6 mm)	IEC60243-1	kV/mm	30
體積固有阻抗 Volume resistivity	IEC60093	Ohm × cm	> 10 ¹⁶
誘電率 Dielectric constant	IEC60250	-	2.91

(100 Hz)			
誘電率 Dielectric strength (106 Hz)	IEC60250	-	2.85
誘電正接因子 Dielectric dissipation factor (100 Hz)	IEC60250	-	6.6×10^{-4}
誘電正接因子 Dielectric dissipation factor (106 Hz)	IEC60250	-	9.2×10^{-3}
耐電弧性 Arc resistance	ASTM D 495	sec	110
光學性質 Optical Properties			
折射率 Refractive index (nD25)	ASTM D542	-	1.585
透光率 Light transmittance	ASTM D 1003	%	85~89
燃燒性 Flammability			
燃燒性 Flammability	UL-94	File No. 238753	V-2 (0.36mm) V-2 (1.5mm) HB (1.9mm) HB (3.0mm) HB (6.0mm)

以上數值係依照ISO及ASTM試驗方法所測得，僅供選擇用途品級之參考。

若有任何疑問請洽服務專線：

TEL： **+886-2-27122211** ext. 6617

FAX：+886-2- 2547-3133

E-mail： kplinmailto:sales.plastic@fcfc.com.tw

FORMOSA IDEMITSU PETROCHEMICAL CORP

5TH FL, ROOM 660, 201 TUNG HWAN RD, TAIPEI TW

#2200+(f2), #2500+(f2)**Polycarbonate (PC), furnished as pellets, powder, sheets, finished parts**

Color	Min Thk (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str
ALL	0.36	V-2	-	-	130	125	130
	1.5	V-2	3	0	130	125	130
	2.9	V-2	3	0	130	125	130
	3.0	HB	2	0	130	125	130
	6.0	HB	1	0	130	125	130

Comparative Tracking Index (CTI): **2**Dimensional Stability (%): **0**High-Voltage Arc Tracking Rate (HVTR): **2**High Volt, Low Current Arc Resis (D495): **6**Dielectric Strength (kV/mm): **30**Volume Resistivity (10xohm-cm): **-**

UL94 small-scale test data does not pertain to building materials, furnishings and related contents. UL94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by ULI.

Report Date: 2003-10-10

Last Revised: 2003-10-24

Underwriters Laboratories Inc®

**IEC and ISO Test Methods**

Test Name	Test Method	Units	Thickness Tested (mm)	Value
IEC Flammability	IEC 60695-11-10	Class (color)	0.36	V-2 (ALL)
			1.5	V-2 (ALL)
			2.9	V-2 (ALL)
			3.0	HB40 (ALL)
			6.0	HB40 (ALL)
Glow-Wire Flammability (GWFI)	IEC 60695-2-12	C	-	-
Glow-Wire Ignition (GWIT)	IEC 60695-2-13	C	-	-
IEC Comparative Tracking Index	IEC 60112	Volts (Max)	-	-
IEC Ball Pressure	IEC 60695-10-2	C	-	-
ISO Heat Deflection (1.80 MPa)	ISO 75-2	C	-	-
ISO Tensile Strength	ISO 527-2	MPa	-	-
ISO Flexural Strength	ISO 178	MPa	-	-
ISO Tensile Impact	ISO 8256	kJ/m2	-	-
ISO Izod Impact	ISO 180	kJ/m2	-	-
ISO Charpy Impact	ISO 179-2	kJ/m2	-	-

Underwriters Laboratories Inc®



PRODUCT SPECIFICATION

HAMBURG H-2(CB) 環保阻燃熱收縮套管(薄品)

Environmentally friendly, flexible, ultra thin-wall, flame-retardant polyolefin tubing

■ 應用

HAMBURG H-2(CB)系柔軟、阻燃、輻照交聯聚烯烴復合物制成之環保超薄型熱收縮套管，通過 UL 及 CSA 認證。H-2(CB)系超薄設計，快速收縮，特別適用於空間緊張和對溫度敏感的場合。例如，高密度連接器的應力解除，輕、薄、小、熱敏元件的絕緣保護等。H-2(CB)不含 PCBs、PCPs、PBBs、PBBOs、PBBEs、PBDEs 等對環境有害的物質、符合環保要求。

■ 特點

- ◎收縮比 2 : 1
- ◎低溫收縮、快速收縮
- ◎柔軟、高阻燃
- ◎優異的物理、化學及電學性能
- ◎不含 PCBs、PCPs、PBBs、PBBOs、PBBEs、PBDEs 等對環境有害的物質，符合歐洲 RoHS 環保指令及 SONY SS00259 標準的要求。
- ◎可提供多種規格及顏色

■ 溫度範圍

- ◎連續使用溫度：-55℃~125℃
- ◎最低起始收縮溫度：60℃
- ◎最低完全收縮溫度：100℃

■ 認證 / 符合標準

- ◎UL224 E255394 125℃ 300V VW-1
- ◎CSA C22.2 229705 125℃ 150V VW-1

■ Application

HAMBURG H-2(CB) is environmentally friendly, flexible, ultra thin-wall, flexible, flame-retardant, irradiated crosslinking heat-shrinkable modified polyolefin tubing. It is designed for applications that require an ultra thin wall for rapid shrinking and space saving. Low shrink temperature further reduces installation time and the risk of damage to temperature-sensitive components.

■ Features/Benefits

- ◎Shrink ration:2:1
- ◎Low shrink temperature
- ◎Ultra thin-wall, rapid shrinking.
- ◎Very flexible, flame-retardant
- ◎Free of PCBs, PCPs, polybrominated biphenyls (PBBs), polybrominated biphenyl oxides and others (PBBOs, PBBEs, and PBDEs) and toxic heavy metal (Pb, Cd, Hg, Cr6+) compounds, which are classified as environmentally hazardous substances. Conforms to European RoHS environmental directive.
- ◎Wide range of sizes and colors

■ Operation Temperature Range

- ◎Operating temperature range: -55℃~125℃
- ◎Minimum shrink temperature: 60℃
- ◎Minimum full recovery temperature: 100℃

■ Standards/Approvals

- ◎UL224 E255394 125℃ 300V VW-1
- ◎CSA C22.2 229705 125℃ 150V VW-1

HAMBURG H-2 (CB)



HAMBURG INDUSTRIES CO.,LTD

6FL, No.12, Lane 270, Sec.3, Pei Shen Rd., Shen Keng Hsiang, Taipei Hsien, Taiwan 222

■ 性能指標 Specification values

特性	項目 Property	指標要求 Requirement	測試方法 Test method	曲型值 Typical data
物理特性 Physical	軸向收縮率	5%max	ASTM D 2671	$\leq 5\%$
	同心度 Concentricity	70%min	ASTM D 2671	$\geq 70\%$
	抗張強度 Tensile strength	10.4Mpa min	ASTM D 638	$\geq 14.0\text{MPa}$
	斷裂伸長率 Elongation	200%min	ASTM D 638	$\geq 400\%$
	熱沖擊 Heat shock	無裂痕 No cracking	ASTM D 2671	通過 Pass
	低溫柔軟性(-55℃,4 小時) Low temperature flexibility-55℃,4hrs	無裂痕 No cracking	ASTM D 2671	通過 Pass
	熱老化 158℃,168 小時			通過 Pass
	老化后抗張強度 Tensile strength after aging	初始值的 70%以上 70% of original min	ASTM D 638	$\geq 90\%$
	老化后斷裂伸長率 Elongation after aging	100%min	ASTM D 638	$\geq 300\%$
電學特性 Electrical	絕緣耐壓和擊穿 Dielectric voltage withstand	2500V,60sec,不擊穿 No Breakdown	UL224	通過 Pass
	絕緣強度 Dielectric strength	19.7KV/mm min	ASTM D 2671	25KV/mm
	體積電阻率 Volume resistivity	$10^{14}\Omega\cdot\text{cm}$ min	ASTM D 876	$\geq 10^{14}\Omega\cdot\text{cm}$
化學特性 Chemical	銅腐蝕 Corrosion	無裂痕 No cracking	ASTM D 2671	通過 Pass
	銅穩定性	伸長率 $\geq 100\%$	ASTM D 2671	通過
	阻燃性 Flammability	VW-1	UL224	通過 Pass

HAMBURG H-2 (CB)

For further information, please contact:

Tel: 886 2 2662 8882 Fax: 886 2 2662 7201~2 E-mail: Taipei@hamburg.com.tw URL: <http://www.hamburg.com.tw>



HAMBURG INDUSTRIES CO.,LTD

6FL, No.12, Lane 270, Sec.3, Pei Shen Rd., Shen Keng Hsiang, Taipei Hsien, Taiwan 222

規格尺寸 Product sizes

規格 Size(mm)	收縮前(mm) As supplied		收縮后(mm) After recovery		包裝 Standard length (M/卷)
	內徑 Inside diameter	壁厚 Wall thickness	內徑 Inside diameter (max.)	壁厚 Wall thickness (min.)	
Φ0.8	1.0 ± 0.2	0.10 ± 0.03	0.5	0.20	200
Φ1.0	1.4 ± 0.2	0.10 ± 0.03	0.6	0.20	200
Φ1.5	1.9 ± 0.2	0.10 ± 0.03	0.75	0.20	200
Φ2.0	2.4 ± 0.2	0.12 ± 0.03	1.0	0.20	200
Φ2.5	2.8 ± 0.3	0.13 ± 0.05	1.25	0.25	200
Φ3.0	3.4 ± 0.3	0.13 ± 0.05	1.5	0.25	200
Φ3.5	3.9 ± 0.3	0.13 ± 0.05	1.75	0.25	200
Φ4.0	4.4 ± 0.3	0.15 ± 0.05	2.0	0.25	200
Φ5.0	5.5 ± 0.3	0.15 ± 0.05	2.5	0.25	100
Φ6.0	6.5 ± 0.3	0.15 ± 0.05	3.0	0.28	100
Φ7.0	7.5 ± 0.3	0.15 ± 0.05	3.5	0.28	100
Φ8.0	8.6 ± 0.4	0.15 ± 0.05	4.0	0.28	100
Φ9.0	9.6 ± 0.4	0.15 ± 0.05	4.5	0.28	100
Φ10.0	10.6 ± 0.4	0.15 ± 0.05	5.0	0.28	100
Φ11.0	11.6 ± 0.4	0.18 ± 0.05	5.5	0.28	100
Φ12.0	12.6 ± 0.4	0.20 ± 0.05	6.0	0.28	100
Φ13.0	13.6 ± 0.4	0.20 ± 0.05	6.5	0.30	100
Φ14.0	14.6 ± 0.4	0.20 ± 0.05	7.0	0.30	100
Φ15.0	15.6 ± 0.5	0.20 ± 0.05	7.5	0.32	100
Φ16.0	16.6 ± 0.5	0.20 ± 0.05	8.0	0.36	100
Φ18.0	18.6 ± 0.5	0.22 ± 0.05	9.0	0.36	100
Φ20.0	21.0 ± 1.0	0.25 ± 0.05	10.0	0.36	50
Φ22.0	23.0 ± 1.0	0.25 ± 0.05	11.0	0.40	50
Φ25.0	26.0 ± 1.0	0.25 ± 0.05	12.5	0.40	50

HAMBURG H-2 (CB)

Ordering Information

◎Color

Standard: Black (-BK), White(-WH),Red(-RD), Blue(-BL), Yellow(-YL), Green(-GR),

Nonstandard: Available upon request.

◎Nonstandard size: Special sizes are available upon request.

◎Standard packaging: On spools, Cut pieces are available upon request.

◎Ordering description: Specify product type, size(mm or inch)and color.

For further information,please contact:

Tel: 886 2 2662 8882 Fax: 886 2 2662 7201~2 E-mail: Taipei@hamburg.com.tw URL: <http://www.hamburg.com.tw>

UL Online Certifications Directory

YDPU2.E255394 Tubing, Extruded Insulating - Component

[Page Bottom](#)

Tubing, Extruded Insulating - Component

[See General Information for Tubing, Extruded Insulating - Component](#)

HAMBURG INDUSTRIES CO LTD

E255394

6TH FL

12 LANE 270 PEI SHEN RD, SEC 3

SHEN KENG HSIANG, TAIPEI HSIEN 222 TAIWAN

Cat. No.	Max V	Max Oper Temp	Shrinkdown Class	Col Recognized	Max Temp Rated Oil Resistance * C	VW-1 Rated #
Flexible Heat Shrinkable Polyolefin tubing.						
H-2(+)	600	125	I	All except CL	None	Yes##
H-2 (CB)	150	125	I	Black and White	None	Yes

#Tubing is considered to comply with the optional VW-1 flammability requirements only if it is so marked.

VW-1 flammability rating limited to Black color only.

+ in the designation represents CTMS/TMS.

(CB) - Indicates 150V rated thin-walled tubing with a wall thickness in accordance with UL 224.

Marking: Company name Recognized Component Mark, the catalog designation, temperature rating in degrees C, and voltage rating appear on tags attached to both ends of the tubing or on the shipping spool label or smallest unit container.

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Certificate of Compliance

Certificate: 229705

Project: 1661899M

Date Issued: April 28, 2005

Issued to: Hamburg Industries Co., Ltd.
6F., No. 12, Lane 270, Sec. 3,
Pei Shen Rd., Shen Keng Hsiang,
Taipei Hsien, Taiwan

The products listed below are eligible to bear the CSA Mark shown



Authorized by: 
Director, Far East Operation

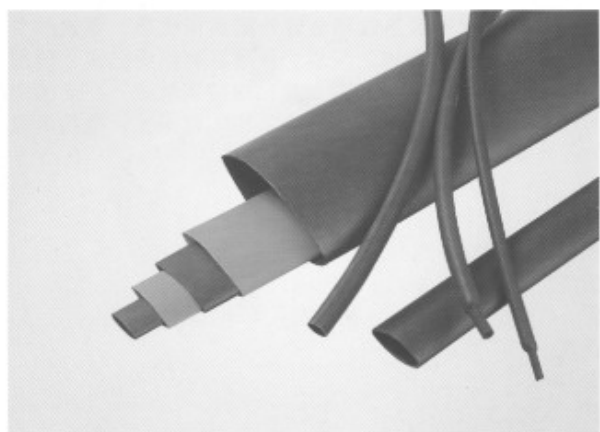
PRODUCTS

CLASS 9032 01 - INSULATING DEVICES AND MATERIALS Insulating Tubing and Sleeving

- Flexible, heat-shrinkable, Cross-linked polyolefin tubing:

Cat No	Voltage Rating (V)	Temp Rating (C)	Trade Size (mm)	Notes
HAMBURG H-2	600	125	1.0-30	1

Note: In all colours except clear or translucent.



WOER SBRS系列 SBRS-(2X) G 2:1 环保柔软型带胶热收缩套管是采用优质、柔软的文联聚烯烃材料和环保热熔胶复合加工而成。产品分SBRS-(2X)G型和SBRS-(2X)GCB两种类型。产品具有柔软、密封、环保(RoHS)、外层自熄等优点,广泛应用于电子设备的接线防水、防漏气、金属管线的防腐保护、电子线缆的修补、水泵和潜水泵的接线防水。

特点:

- ①适用温度-45~125℃;
- ②起始收缩温度70℃, 最低完全收缩温度120℃;
- ③内胶层熔化温度70~100℃;
- ④收缩倍率: 2:1, 轴向收缩率 $\leq \pm 8\%$;
- ⑤密封防水, 环保(RoHS); 外层自熄。

标准颜色: 黑色(可订做其它颜色)。

性能特性

性能	测试方法	性能指标
拉伸强度(MPa)	ASTMD 2671	≥ 10.4
断裂伸长率(%)	ASTMD 2671	≥ 300
热老化后拉伸强度(MPa)	UL224 158℃ X 168h	≥ 7.3
热老化后断裂伸长率(%)	UL224 158℃ X 168h	≥ 200
击穿强度(Kv/mm)	IEC 243	≥ 15
体积电阻率($\Omega \cdot \text{cm}$)	IEC 93	$\geq 1 \times 10^{14}$

热熔胶特性

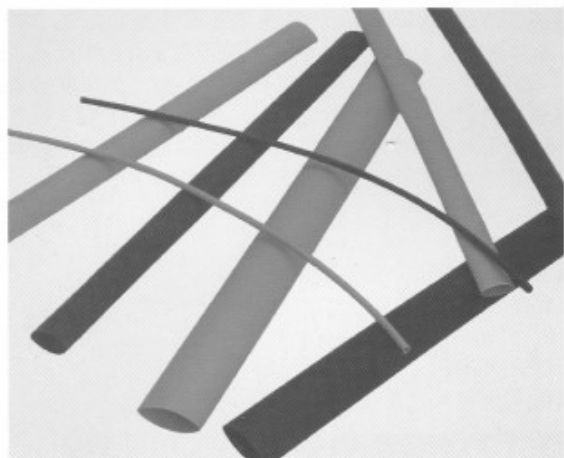
性能	测试方法	性能指标
吸水率	ASTM-D570	$< 0.2\%$
软化点	ASTM-E8	95℃
剥离强度(PE)	ASTM-D1000	120N/25mm
剥离强度(AL)	ASTM-D1000	80N/25mm

SBRS-(2X) G 环保柔软型带胶2:1热收缩套管产品规格

规格		收缩前最小内径mm	自由收缩后			标准包装米/盘
Inch	mm		最大内径mm	平均总壁厚mm	平均胶层厚度mm	
1/16	Φ1.6	1.6	0.8	0.60±0.15	0.30±0.1	200
3/32	Φ2.4	2.4	1.2	0.70±0.15	0.35±0.1	200
1/8	Φ3.2	3.2	1.6	0.70±0.15	0.35±0.1	200
3/16	Φ4.8	4.8	2.4	0.80±0.15	0.4±0.1	100
1/4	Φ6.4	6.4	3.2	0.80±0.15	0.4±0.1	100
5/16	Φ7.9	7.9	3.9	0.90±0.15	0.45±0.1	100
3/8	Φ9.5	9.5	4.8	0.90±0.15	0.45±0.1	1.22
1/2	Φ12.7	12.7	6.4	0.95±0.20	0.45±0.1	1.22
5/8	Φ15.9	15.9	7.9	0.95±0.20	0.45±0.1	1.22
3/4	Φ19.1	19.1	9.5	1.0±0.20	0.45±0.1	1.22
1	Φ25.4	25.4	12.7	1.1±0.20	0.50±0.1	1.22
1 1/4	Φ31.8	31.8	15	1.15±0.20	0.50±0.1	1.22
1 1/2	Φ38.1	38.1	19	1.25±0.20	0.50±0.1	1.22
1 3/4	Φ44.5	44.5	22	1.35±0.20	0.55±0.1	1.22
2	Φ50.8	50.8	25.4	1.5±0.25	0.60±0.1	1.22

SBRS-(2X) GCB 环保柔软型带胶2:1超薄热收缩套管产品规格

规格		收缩前最小内径mm	自由收缩后			标准包装米/盘
Inch	mm		最大内径mm	平均总壁厚mm	平均胶层厚度mm	
1/16	Φ1.6	1.6	0.8	0.40±0.15	0.20±0.1	200
3/32	Φ2.4	2.4	1.2	0.45±0.15	0.25±0.1	200
1/8	Φ3.2	3.2	1.6	0.45±0.15	0.25±0.1	200
3/16	Φ4.8	4.8	2.4	0.50±0.15	0.25±0.1	100
1/4	Φ6.4	6.4	3.2	0.55±0.15	0.25±0.1	100
5/16	Φ7.9	7.9	3.9	0.60±0.15	0.30±0.1	100
3/8	Φ9.5	9.5	4.8	0.70±0.15	0.30±0.1	1.22
1/2	Φ12.7	12.7	6.4	0.75±0.20	0.35±0.1	1.22
5/8	Φ15.9	15.9	7.9	0.80±0.20	0.35±0.1	1.22
3/4	Φ19.1	19.1	9.5	0.85±0.20	0.40±0.1	1.22
1	Φ25.4	25.4	12.7	0.90±0.20	0.40±0.1	1.22



WOER SBRS系列 环保柔软带胶热收缩套管外层采用优质、柔软的双联聚烯烃材料，内层热熔胶复合加工而成。外层具有绝缘防腐、耐磨等优点，内层具有低熔点、防水、密封和高粘接性等优点。广泛应用于电子设备的接线防水、防漏气，电线分支处的防腐保护，电线电缆的修补，水泵和潜水泵的接线防水等场合。

特点：

- ①3:1收缩比，适应于不规则形状的绝缘及密封；
 - ②中等壁厚，在保持柔软性的同时，提高了机械保护强度；
 - ③胶层可粘接塑料，橡胶，金属；
 - ④起始收缩温度：70℃，最低完全收缩温度：125℃；
 - ⑤内层胶熔化温度：70℃~100℃
 - ⑥工作温度范围-40℃~125℃
- 标准颜色：黑色(可订做其它颜色)。

性能特性

性能	测试方法	性能指标
拉伸强度(MPa)	ASTMD 2671	≥ 10.4
断裂伸长率(%)	ASTMD 2671	≥ 300
热老化后拉伸强度(MPa)	UL224 158℃ X 168h	≥ 7.3
热老化后断裂伸长率(%)	UL224 158℃ X 168h	≥ 200
击穿强度(Kv/mm)	IEC 243	≥ 15
体积电阻率(Ω.cm)	IEC 93	≥ 1X10 ¹⁴

热熔胶特性

性能	测试方法	性能指标
吸水率	ASTM-D570	<0.2%
软化点	ASTM-E8	95℃
剥离强度(PE)	ASTM-D1000	120N/25m
剥离强度(AL)	ASTM-D1000	80N/25m

SBRS-(3X) G-DWP-125(环保柔软带胶热收缩套管)产品规格

规格		收缩前 最小内径		自由收缩后						标准包装
				最大内径mm		平均总壁厚mm		平均胶层厚度mm		盘/箱
Inch	mm	mm	Inch	mm	Inch	mm	Inch	mm	Inch	
1/8	Φ3.2	3.2	[0.125]	1	[0.040]	1.02	[0.040]	0.25	[0.010]	200
3/16	Φ4.8	4.8	[0.187]	1.5	[0.060]	1.4	[0.055]	0.51	[0.020]	200
1/4	Φ6.4	6.4	[0.250]	2	[0.080]	1.45	[0.057]	0.56	[0.022]	100
3/8	Φ9.5	9.5	[0.375]	3	[0.120]	1.65	[0.065]	0.68	[0.027]	50
1/2	Φ12.7	12.7	[0.500]	4	[0.157]	1.78	[0.070]	0.76	[0.030]	1.22
3/4	Φ19.1	19.1	[0.750]	6	[0.230]	2.03	[0.080]	0.76	[0.030]	1.22
1	Φ25.4	25.4	[1.000]	8	[0.320]	2.5	[0.100]	0.76	[0.030]	1.22
1-1/4	Φ30	30	[1.250]	10.2		2.5		0.90		1.22
1-1/2	Φ39	39	[1.500]	13.5		2.5		0.90		1.22

**YDPU8.E203950****Tubing, Extruded Insulating Certified for Canada - Component**
[Page Bottom](#)
Tubing, Extruded Insulating Certified for Canada - Component
[See General Information for Tubing, Extruded Insulating Certified for Canada - Component](#)
SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO LTD

E203950

XINWEI INDUSTRIAL PARK, WOER MANSION

NANSHAN DISTRICT, XILI

SHENZHEN, GUANGDONG 518052 CHINA

Cat. No.	Max V	Max Temp C	Col Recognized	Max Temp Rated Oil Resistance C	VW-1 Rated #
Heat-Shrinkable Polyolefin Tubing					
RSFR-x	600	125	Black	None	Yes
RSFR-x	600	125	White	None	Yes
WKZM-x-yz	600	125	White	None	No
RSFR-H	600	125	All except Clear	None	Yes
RSFR(CB)	300	125	All except Clear	None	Yes
Not Heat-Shrinkable PTFE Tubing					
WF	600	200	Natural	None	Yes
Heat-Shrinkable Polyolefin Tubing with Meltable Liner					
SBRS	600	105	All except Clear	None	Yes
Not Heat-Shrinkable Standard Wall Silicone Tubing					
WST-600	600	150	White	None	@

x - Designated tubing expanded ID. For Black color tubing, x represents expanded ID of 2 mm - 8 mm. For White color tubing, x represents expanded ID of 1mm - 50 mm.

yz - Represents any alpha and/or numeric combination for internal client code.

- Tubing is considered to comply with the optional VW-1 flammability requirements only if it is so marked.

@ - VW-1 rated for internal diameter sizes 6.50 - 15.00 mm only.

Marking: Company name or file number "E203950", catalog number, voltage rating, temperature rating in degrees C, inside diameter (before and

after recovery), date of manufacture and the Recognized Component Mark for Canada  on tags attached to both ends of the tubing or on the shipping spool label or smallest unit container.

[Last Updated](#) on 2007-09-25

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樣品檢驗記錄表

編號: SSR-211352

華裕料號/ 專案代號		C037-511078-A		品名/規格		RF Antenna Cable Assembly		數量		C-PCU		日期		判定	
檢驗 項目	Item	公差	樣品編號								量測 工具	判定			
			1	2	3	4	5	6	7	8			9	10	
尺寸	1	±3	60	60	62	60	60						A	<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NG
	2													<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NG
	3													<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NG
	4													<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NG
	5													<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NG
	6													<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NG
	7													<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NG
	8													<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NG
外觀	1	咬花	樣品或規格									目視	<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NG	
	2	配色	樣品或規格									目視	<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NG	
	3	印刷	樣品或規格									目視	<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NG	
	4	亮霧度	樣品或規格									目視	<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NG	
電氣 特性	1	VSWR		1.1735								NA	<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NG	
	2	S21		-12.903dB								NA	<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NG	
	3	Gain										chamber	<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NG	
零件組 配性	各零件組配 性狀況	樣品或規格												<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NG
材料選 用確認	是否依照成 品圖之材料													<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NG
備注:															

※量測工具: a游標卡尺 b塞規 c深度規 d工具顯微鏡 e厚薄規 f分厘卡 g扭力計 h拉拔測試機 i組配

尺寸檢驗:標注在附圖Mark表示

核 準:  審 核:  工 程 師: 

