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書

APPROVAL SHEET

CUSTOMER:華泰電子股份有限公司

FILE NO . :

DESCRIPTION :2.4GHZ Antenna

經理 Manager	品保 Q C	工 程 師 Engieer

ANTENNIQUES P/N : MCS-003-190-01

CUSTOMER P/N :

DATE : 中華民國 92 年 07 月 4 日

Customer Approval

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欣格科技股份有限公司 Antenniques Co.,Ltd

台北縣樹林市柑園街二段 122 巷 6 號 5 樓

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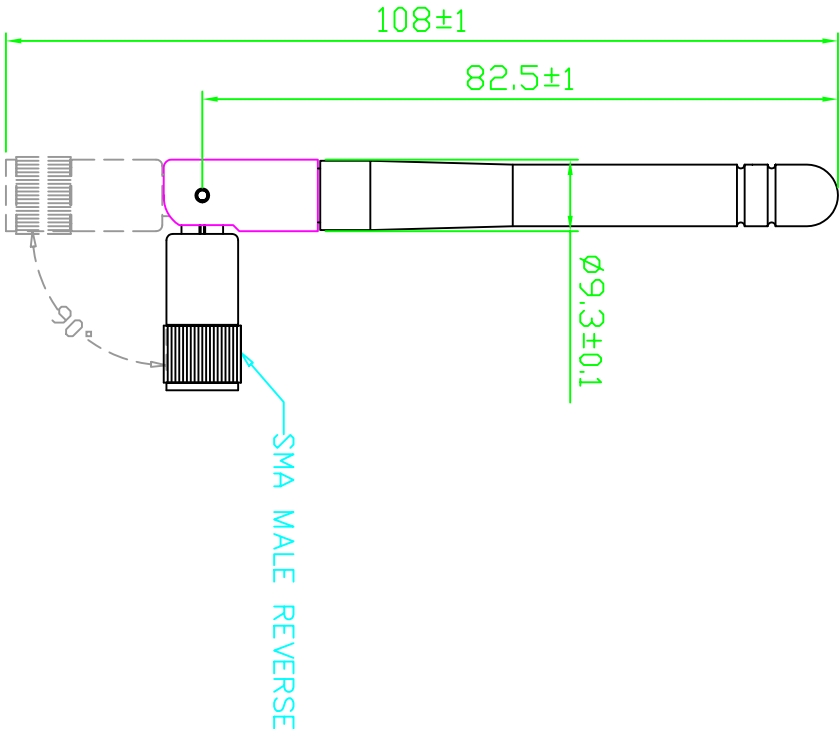
5F,No.6,Laine 122, Sec 2,Ganyun St, Shulin Chulin City,

Taipei Hsien,238 Taiwan R.O.C.

E-mail : anten.niques@msa.hinet.net

網 站 : www.antenniques.com.tw

REVISIONS			1
REV	BY	DESCRIPTION	DATE
1			



TOLERANCE UNLESS OTHERWISE SPECIFIED (㎜)									
CLASS	A	B	C	D	E	F	◎		
< 6mm	0.05	0.1	0.1	0.2	0.2	0.4	0.4		
8 ~ 25mm	0.08	0.15	0.15	0.3	0.3	0.6	0.6		
25 ~ 60mm	0.12	0.2	0.25	0.4	0.5	0.8	1.0		
60 ~ 250mm	0.25	0.3	0.4	0.6	0.8	1.2	1.5		
250 ~ 600mm	0.5	0.6	0.8	1.0	1.5	2.0	3.0		
> 600mm	1.0	1.0	1.5	1.7	3.0	4.0	6.0		
ANGLE	0.5								

1	QTY	PART NUMBER	DESCRIPTION	
ITEM NO.	REQD			
METRIC			DRAWN	DATE
			CHECK	DATE
THIRD ANGLE PROJECTION			DESIGN	DATE
FINISH			REV A0	SHEET
MATERIAL			SIZE A4	SCALE 1
1			2	1 OF 1
DO NOT SCALE DRAWING			1 1	
PARTS LIST			TITLE	
Antenniques Corp. Ltd.			成品圖	
PART NO.			MCS003-190-01	
DRAWING NO			WR-R-AD443-A1	

TECHNICAL DATA

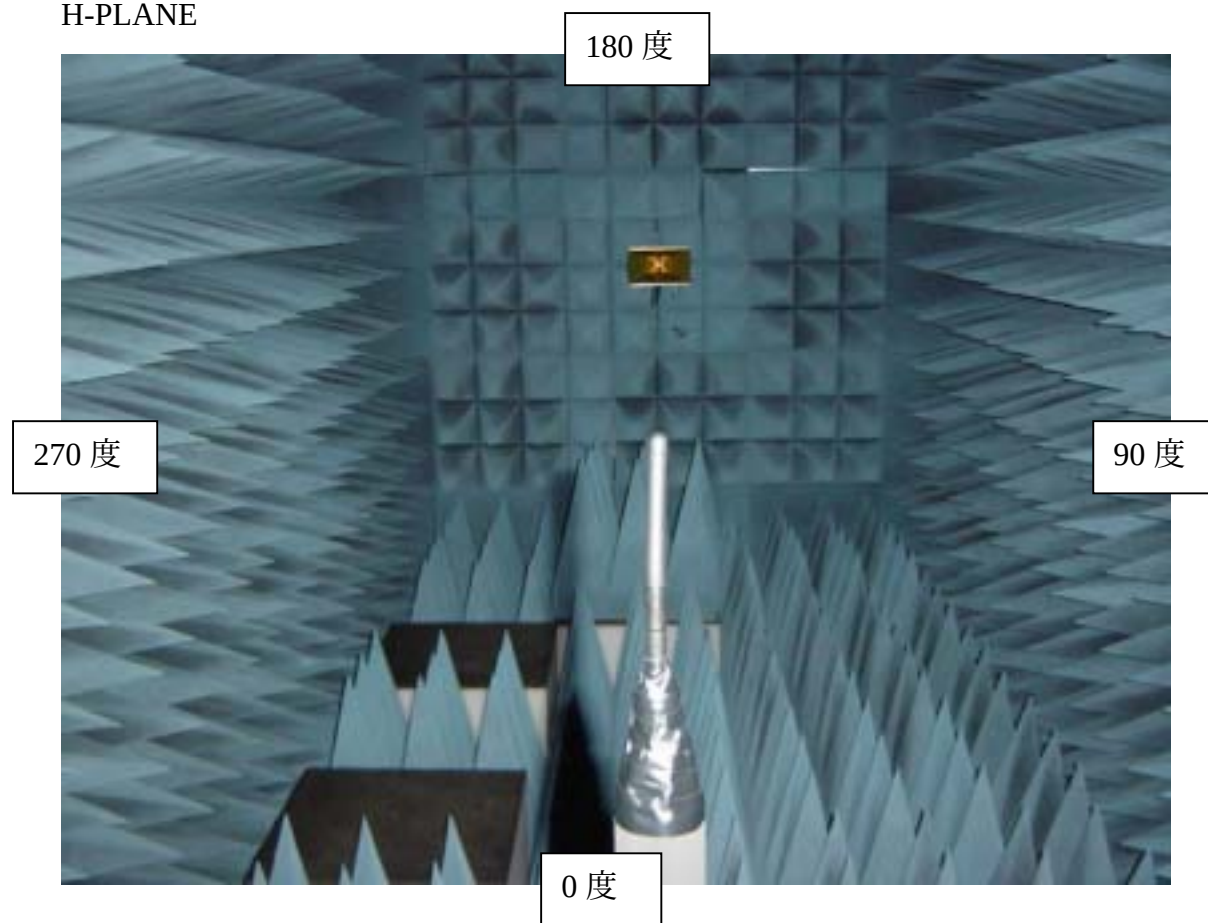
● Electrical Properties

Frequency Range	: 2.4 ~ 2.5GHz
Impedance	: 50 Ohm nominal
VSWR	: ≤ 2.0
Gain	: 2dBi
Radiation	: Omni
Polarization	: Vertical
Electrical Wave	: $\lambda/4$ Dipole
Connector	: SMA Plug Reverse

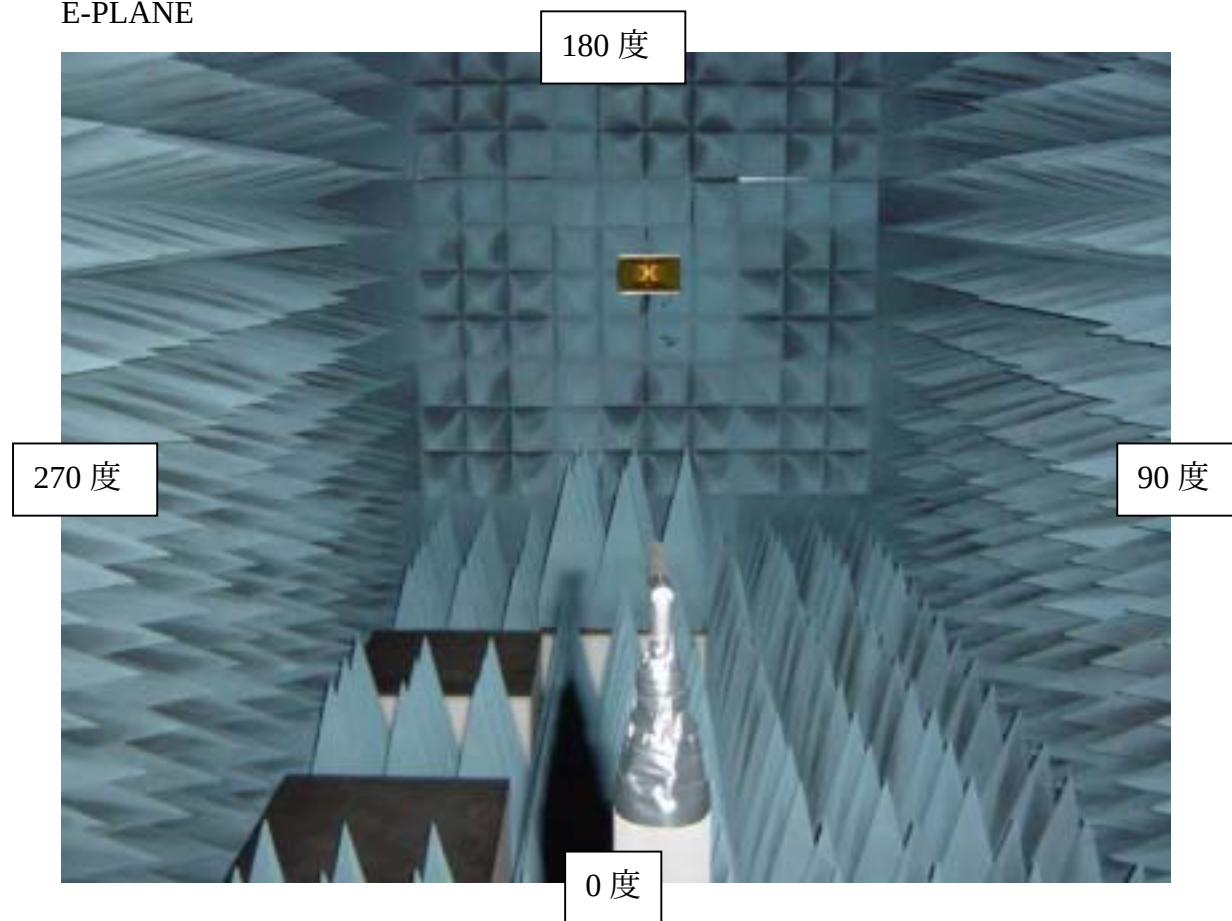
● Mechanical Properties

Antenna Cover	: PU
Color	: Black
Operation Temperature	: -20°C ~ $+60^{\circ}\text{C}$
Storage Temperature	: -30°C ~ $+75^{\circ}\text{C}$

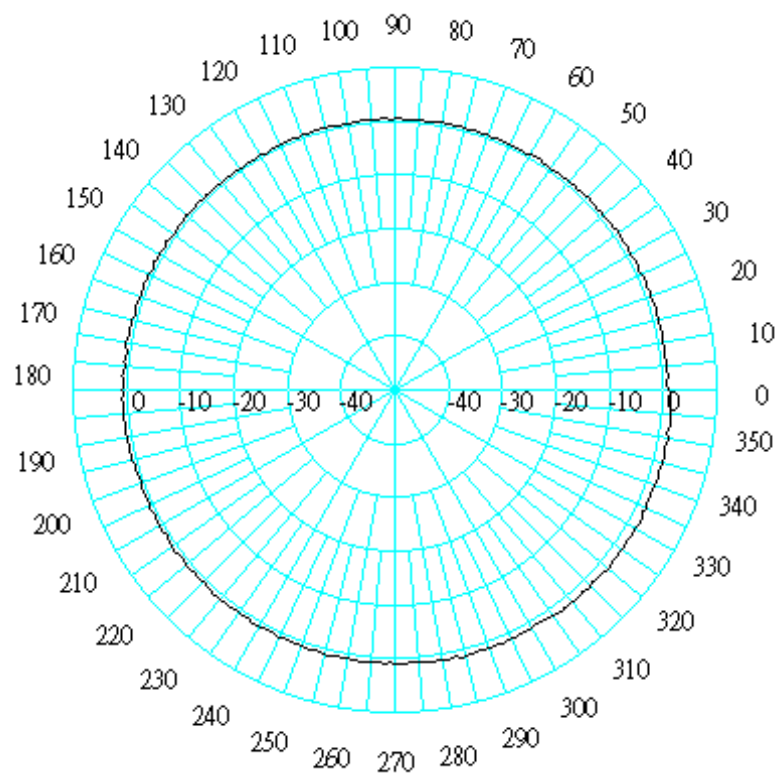
H-PLANE



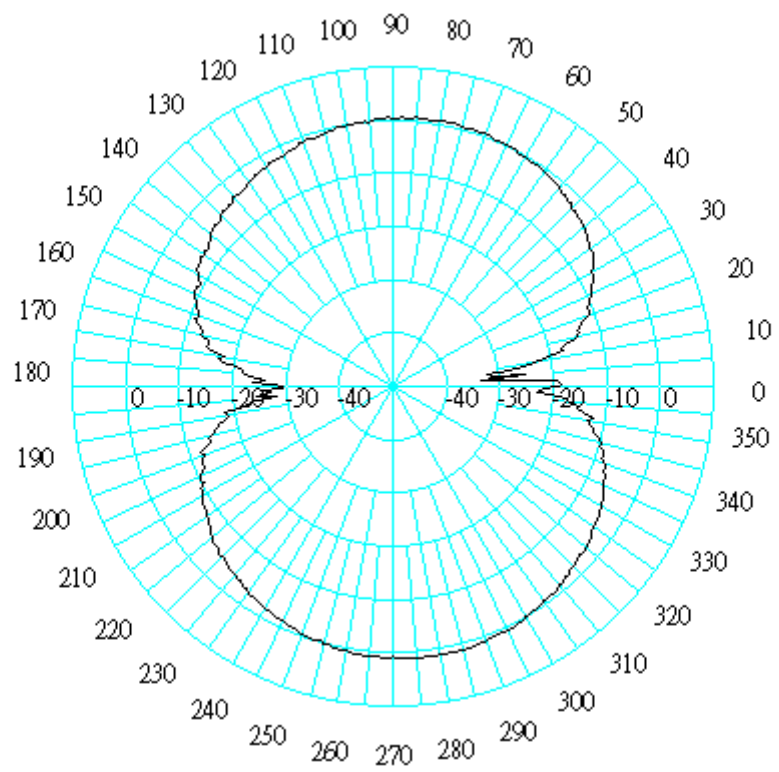
E-PLANE



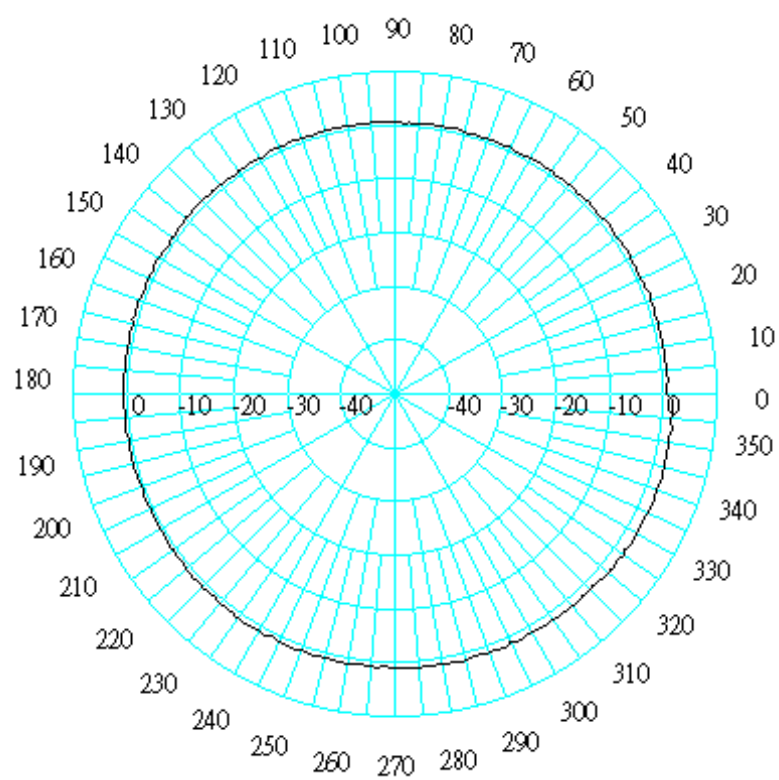
H-PLANE2.40 PEAK1.823 AVER 0.8



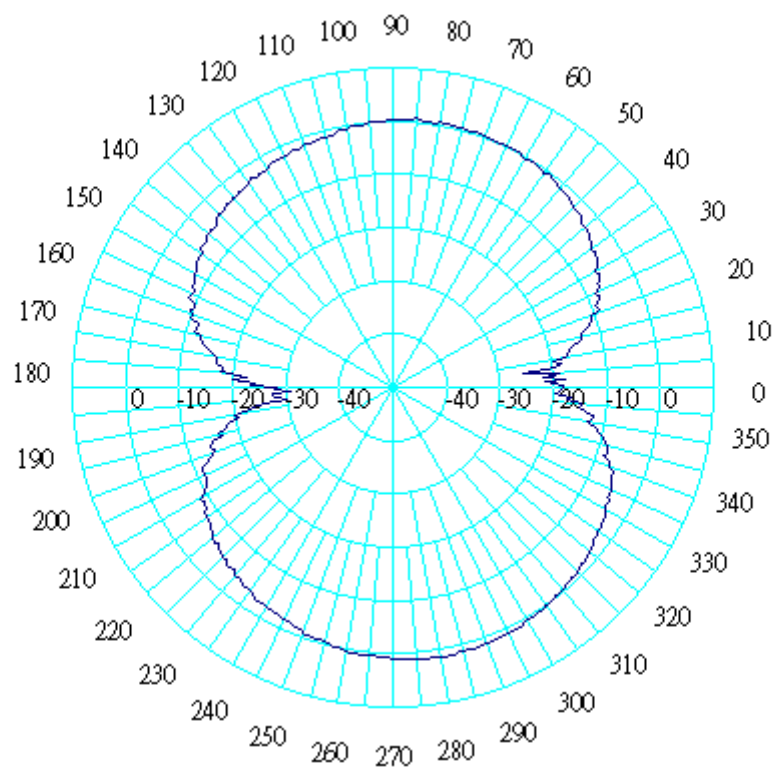
,
E-PLANE



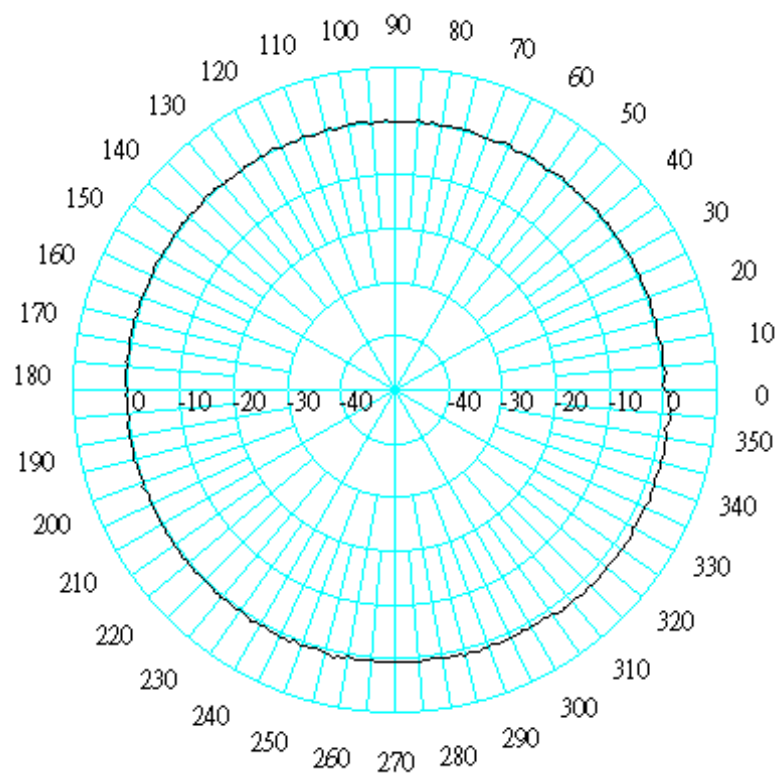
H-PLANE2.45 PEAK2.13 AVER1.0



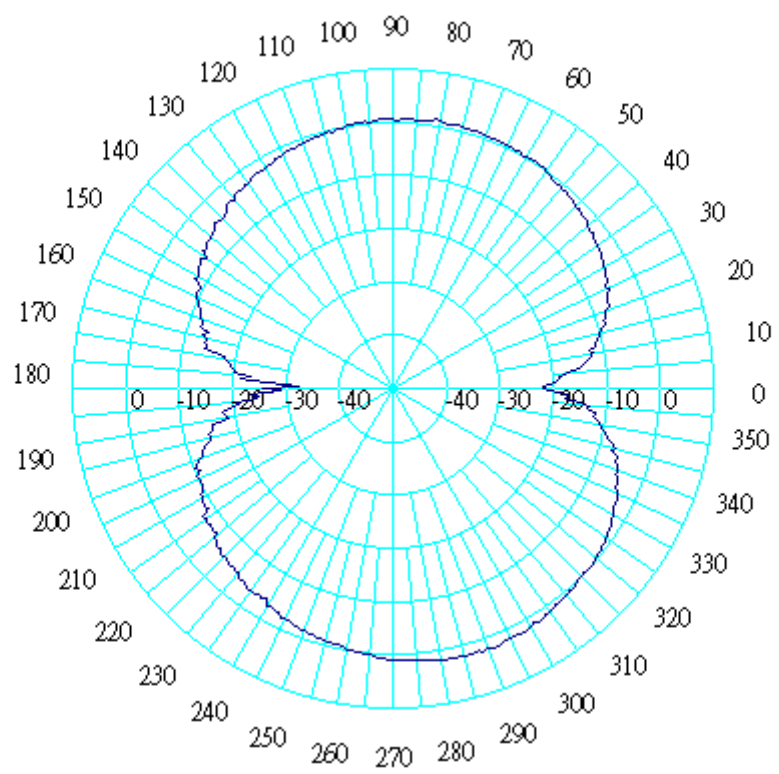
E-PLANE



H-PLANE2.50 PEAK1.72 AVER0.73



E-PLANE



SMA Specifications

Electrical Properties

1 Impedance.....	50 Ohms
2 Frequency Range.....	0~8 Ghz
3 SWR.....	1.1 (Max.)
4 Working Voltage.....	≤250 Vrms
5 Dielectric Withstanding Voltage.....	≤750 Vrms
6 Insulation Resistance.....	≥2000 Megohms
7 Contact Resistance.....	Center contact: 3.0 Milliohms(Max.) Outer contact: 2.5 Milliohms(Max.)
8 Insertion Loss.....	0.2 dB

Environmental Ratings

1 Operating Temperature.....	-65°C ~ +165°C
2 Thermal Shock.....	MIL-STD-202, Method 107, Condition B
3 Corrosion.....	MIL-STD-202, Method 101, Condition B
4 Shock.....	MIL-STD-202, Method 213, Condition I
5 Vibration.....	MIL-STD-202, Method 204, Condition D
6 Moisture Resistance.....	MIL-STD-202, Method 106

Material Specifications

1 Body.....	Brass Per JIS H3250 C3604 BD, Black chrome Plated
2 Contact.....	Beryllium Copper Per QQ-C-530, Gold Plated Per MIL-G-45204
3 Insulator.....	PTFE Fluorocarbon Per ASTM D 1710



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SMA Test Report

Name: Ping

Date: 2002/4/24

N= 1	Au= 7.09 μ "	Ni= 186.2 μ "
N= 2	Au= 6.95 μ "	Ni= 131.5 μ "
N= 3	Au= 7.01 μ "	Ni= 117.6 μ "
N= 4	Au= 6.92 μ "	Ni= 177.8 μ "
N= 5	Au= 7.50 μ "	Ni= 209.6 μ "

BLOCK RESULT

Product : Au / Ni / Cu

	<u>Au</u>	<u>Ni</u>
Mean Value.....X :	7.10 μ "	164.4 μ "
Meas. Time..... : 10	s	
Standard Dev.S :	0.241 μ "	38.7 μ "
C. O. V. [G].....V :	3.39 %	23.51 %
No of Readings.....n :	5	5
Range.....R :	0.60 μ "	92.1 μ "
Min. Readings..... :	6.90 μ "	117.4 μ "
Max. Readings..... :	7.51 μ "	209.6 μ "

CHECK:陳建明



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SMA Test Report

Name: Body

Date: 2002/4/20

N= 1	Au= 7.11 μ "	Ni= 164.4 μ "
N= 2	Au= 7.72 μ "	Ni= 207.9 μ "
N= 3	Au= 7.88 μ "	Ni= 211.3 μ "
N= 4	Au= 7.81 μ "	Ni= 204.2 μ "
N= 5	Au= 7.41 μ "	Ni= 210.9 μ "

BLOCK RESULT

Product : Au / Ni / Cu

	<u>Au</u>	<u>Ni</u>
Mean Value.....X :	7.51 μ "	199.8 μ "
Meas. Time..... :	10 s	
Standard Dev.S :	0.330 μ "	19.7 μ "
C. O. V. [G].....V :	4.33 %	9.96 %
No of Readings.....n :	5	5
Range.....R :	0.85 μ "	46.5 μ "
Min. Readings..... :	7.22 μ "	164.4 μ "
Max. Readings..... :	8.11 μ "	210.7 μ "

CHECK:陳建明



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SMA Test Report

鹽水噴霧試驗記錄表

試驗項目及內容

- 1 氯化鈉品質..... 工業用一般用鹽
- 2 蒸餾水品質..... 純水
- 3 外觀要求程度..... 10 (小時)
- 4 噴霧採取器 :
- 4.1 噴霧量..... 15.6 (ml/80cm/h)
- 4.2 收集溶液在室的比重或濃度..... 1.0321
- 4.3 酸鹼濃度..... 6.7
- 5 試樣:
- 5.1 種類..... 銅材
- 5.2 形狀..... N/A
- 5.3 尺度..... N/A
- 5.4 數目..... 5 pcs
- 6 壓縮空氣壓力..... 1.00 kg f/cm
- 7 試驗室相對濕度..... 90 %
- 8 試驗室溫度..... 35±1 °C
- 9 壓力桶溫度..... 47±1 °C
- 10 鹽水桶溫度..... 35±1 °C
- 11 其它..... 2~3 μ (Ni) ; 1.2 μ (Au)

判定

1. 依據標準判定..... 符合 RN 8 級 ↑
2. 依其它方法判定..... N/A

試驗員：吳淑珠



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SMA Brass

檢驗報告表

客 戶		股份有限公司		
品 名		FREE CUTTING BRASS ROD		丸 5.0 m/m
規 格		JIS H3250 C3604 BD		
項 目	數 據	標 準 值	實 測 值	備 註
化 學 成 份 %	Cu	57.0 - 61.0		
	Pb	1.8 - 3.7		
	Fe	< 0.5		
	Sn+Fe	< 1.2		
	Zn	REMAINDER		
其 它				



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BRASS

线

线是种类最多的铍铜产品，没有任何产品在上应用上有线这样广泛。

圆线之使用包括：

- 长行程螺旋弹簧
- 小型机电插座
- 冷锻钉头紧固件
- 弹簧负载测试探针
- 轻量耐疲劳线缆
- BANDOLIERED 连接器接点
- 编织屏蔽布
- 防腐及防生物恶臭海上线及筛网结构
- 眼镜框

线拉直切成一定长度称为杆 (ROD)。

线之断面也可以不是圆形，“异形”线在特殊的应用中担任了重要的角色，如扁线用于可收缩天线及电报电缆。扁线也可用于代替窄带，虽然有宽度对厚度的比，如果超过此比就不可行，但在许多情形下可达到节约。扁线可减少剪裁毛边。

方线用于电子接点，特别是线的包封需要尖锐的角时，可以达到可靠的接触。偶尔，方形及长方形的线，需要斜角以定向。这些需求及其他较不普遍的形状的铍铜线均可以达到。

本公司所供应之线直径自12.7mm至1.3mm，其公差如表所示。较细的线可以向本公司定单或从本公司之许多再拉制商获得。

线可以退火态 (A) 或四分之一硬 (1/4H)、半硬 (1/2H) 或全硬 (H) 供应。但在特别情况下也供应预硬化 (亦称“预处理”) 线。本产品适用于各种强度与耐久性的产品，可达到柔软而严格的成型要求。

技术规格		
BRUSH 合金	UNS 编号	线材
25	C17200	ASTM B 197 QQ-C-530 AMS 4725 SAE J 461, SAE J 463 JIS H3270
M25	C17300	ASTM B 197 QQ-C-530
3	C17510	*
10	C17500	*
ASTM 美国材料试验学会 QQ 联邦规格 SAE 机动车辆工程师学会 AMS 太空材料规格 (SAE 刊載) JIS 日本工业规格 DIN 德国工业规格		
注：除另有规定外，材料均依 ASTM 标准制造。 * 可获得此产品，技术规格在制定中。		

公差 (毫米)			
线直径		BRUSH WELLMAN 标准公差 (+或-)	
以上	以下	冷拉	退火
1.27	2	0.008	0.025
2	3	0.01	0.05
3	6	0.015	0.05
6	8	0.02	0.05
8	10	0.025	0.05
10	12	0.025	0.05
注：非圆形之公差为直径公差的一半。			



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Beryllium Copper

铍铜线之机械及电学性质

合金 Alloy	状态 (*)	热处理	线直径 mm	抗拉强度 kg/mm ²	屈服强度 kg/mm ²	伸长百分比	导电百分比 IACS
25 C17200 和 M25 C17300	A (TB00)	—	1.3-12.7	42-55	14-22	30-60	15-19
	1/4H (TD01)	—	1.3-12.7	63-81	52-74	3-25	15-19
	1/2H (TD02)	—	1.3-12.7	77-95	63-88	2-15	15-19
	3/4H (TD03)	—	1.3-2.0	91-109	80-106	2-8	15-19
	H (TD04)	—	1.3-2.0	98-117	91-113	1-6	15-19
	AT (TF00)	3hr 315-330°C	1.3-12.7	112-141	101-127	3 以上	22-28
	1/4HT (TH01)	2hr 315-330°C	1.3-12.7	123-148	116-141	2 以上	22-28
	1/2HT (TH02)	1.5hr 315-330°C	1.3-12.7	130-152	119-148	2 以上	22-28
	3/4HT (TH03)	1hr 315-330°C	1.3-2.0	133-162	123-155	2 以上	22-28
	HT (TH04)	1hr 315-330°C	1.3-2.0	137-162	126-155	1 以上	22-28
3 C17510 和 10 C17500	A (TB00)	—	1.3-12.7	24-39	7-22	20-60	20-30
	H (TD04)	—	1.3-12.7	45-57	38-53	2-20	20-30
	AT (TF00)	3hr 480-495°C	1.3-12.7	70-92	56-78	10 以上	45-60
	HT (TH04)	3hr 480-495°C	1.3-12.7	77-99	66-88	10 以上	48-60

* ASTM之字母及数码表示的产品状态。



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PTFE MATERIAL

APPENDIX

LEO ME PTFE rod is manufactured with virgin PTFE powder by ram extrusion or compression molding and is conformed to meet the requirement of ASTM 1710 (Standard Specification for TFE FLUOROCARBON ROD) described in following table and JIS K 6889 (JAPANESE INDUSTRIAL STANDARD POLYTETRAFLUOROETHYLENE RODS) .

TABLE 1 Detail Specification for PTFE Rod

ITEM	PROPERTY	ASTM TEST METHOD	VALUE
1	Specific gravity	D792	2.15-2.2
2	Tensile strength	D638	280-350 kg/cm ²
3	Elongation	D638	200-400%
4	Dielectric strength	D149	30kV/mm
5	Deformation under load. 6.9Mpa, 50C, %	D621	3.5 - 6
6	Dissipation factor 1 KHz	D150	Less than 0.0005
7	Dielectric constant 1 KHz	D150	2.0 - 2.1
8	Volume resistivity	D257	> 10 ¹⁶
9	Surface resistivity	D257	10 ¹⁷
10	Flexural modulus	D790	430-500Mpa
11	Compressibility	D1147	16-20%
12	Hardness, durometer	D2240	D53 - D60
13	Impact strength	D256	16kg-cm/cm
14	Coefficient of linear thermal expansion, per C. 30C to 80C, 10 ⁻⁵ C	D696	12.3 to 11.6



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PTFE PROPERTY

Item	UNIT wt%	TEST METHOD (ASTM)	PTFE (NATURE)
Apparent density	g/lit	D-1457	260
Specific Gravity	g/cm ²	D-792	2.18
Tensile Strength	kg/cm ²	D-638	315
Elongation	%	D-638	400
Deformation (Total) MD	%	D-621 (23°C 140 kg/m ²)	—
60min. CD			—
24Hrs. CD			14.3
			16.7
Permanent Deformation MD		150°C 200 kg/cm ²	7.9
CD			8.4
Deformation MD			51.8
60min. CD			—
Flexural Strength CD (0.2% offset)	kg/cm ²	D-790	57
Flexural Modulus CD			3,500 ~ 6,300
Compressive Strength MD (0.2% offset) CD	kg/cm ²	D-695	77
			—
Compressive Modulus MD			4,200
CD			—
Hardness	Durometer "D"	D-2240	55
Impact Strength	kg-cm/cm	D-256	15.8
Coefficient of Thermal Conductivity	Kcal/m.hr.°C	Cenco Fitch	0.21
Coefficient of Linear Thermal Expansio 25~90°C MD	0.01m/°C	D-696	—
CD			12.2
25~150°C MD			—
CD			12.6
25~200°C MD			—
CD			13.7
25~260°C MD			—
CD			16.4
Water Adsorpuon	%	D-570	0
Coefficient of Friction(Dynamic)		P=7 kg/cm ² V=0.5 m/sec	—
Coefficient of Friction(Static)		P=35 kg/cm ²	0.05~0.08



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PTFE QUALITY CONTROL REPORT

We hereby state that the following material is in accordance with our specifications.

Date : November 6, 2001

Product : ICI PTFE G201

Lot No : FPIHRI 9001

Contents : 25kg * 35

Ref No :

Inspection Item	Unit	Data	Test Method
Bulk density	g/L	465	ASTM D 4895
Standard specific gravity		2.174	ASTM D 4895
Particle size(Avg.)	µm	500	ASTM D 4895
Melting point	°C	329	ASTM D 4895
Extrusion pressure	MPa	69.7	Asahi method
Water content	mas %	0.001	ASTM D 4895

ASAHI GLASS FLUOROPOLYMERS CO., LTD.

Tetsuya Higuchi

Production Engineering Group
Polymer Production Department
Chemical Division



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Antenna Cover Polyurethane

Elastogran GmbH
Geschäftsbereich TPU-Elastomere



Elastogran GmbH · Postfach 1140 · 49440 Lemförde · Germany
WGJ COMPANY LTD.

P.O. BOX 36 - 431
RC TAOYUAN HSIEN

BASF Gruppe

Date 18.07.2001
No. 62046

Inspection Certificate EN 10 204-3.1 B (DIN 50049)

Product :	ES 95 A 50 000	S	No. : 15002939
Batch :	207672		
Basic-Batch	207673		

Property	Test method	Unit	Value
Dichte	DIN 53479	g/cm ³	1,24
Shore-Haerte D	DIN 53505	-	50
Zugfestigkeit	DIN 53504	MPa	53
Reissdehnung	DIN 53504	%	550
Abrieb	DIN 53516	mm ³	22

Dichte = Density/Densité, Shore Härte = Shore hardness/Shore Dureté, Zugfestigkeit = Tensile strength/Resistance traction,
Reißdehnung = Elongation at break/Allongement rupture, Weiterreißwiderstand = Tear strength, Abrieb = Abrasion loss/Abrasion

The stated values are measured from a representative batch (basic-batch) of every product campaign.

Test platens are injection moulded from dry granulate with less than 0,05 % water content. Test platens tempered 20 hrs. at 100 °C,
then cooled to 23 °C / 50 % RH before testing. Test specimen cut from test platens.

We hereby certify, that the material described above complies with the terms of the order contract

Hübner Schoots

Works inspector

The above information is derived from our quality checks. It does not relieve the purchaser from examining the product upon delivery
and gives no assurance of suitability of the product for any particular purpose.



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Antenna Cover Polyurethane

Elastollan S規格系列

聚酯類Polyester，有良好機械特性，優異的耐磨性，高彈性，抗拉及撕裂強度用於運動鞋底、溜冰鞋及機械零件等，射出及押出成形

物 性	單位	DIN	S80A	S85A	S88A	S90A	S95A	S98A	S60D	S64D	S74D
用於射出 ▲ 押出 ■ 吹出 ●			▲ ■	▲ ■	▲	▲ ■	▲	▲	▲	▲	▲
硬度 蕭氏A Hardness	Shore A	53505	81	85	88	93	96				
硬度 蕭氏D Hardness	Shore D	53505			36	41	48	55	60	64	75
密度Density	g/cm ³	53479	1.22	1.23	1.23	1.24	1.24	1.25	1.25	1.26	1.26
抗拉強度Tensile strength *	N/mm ²	53504-S2	50	55	55	55	50	45	45	45	40
斷裂延伸率Elongation at break *	%	53504-S2	750	650	650	600	550	500	500	450	300
20% 抗拉模數 Tensile modulus *	N/mm ²	53504-S2	2	2	3	6	8	13	15	22	25
100% 抗拉模數 Tensile modulus *	N/mm ²	53504-S2	4	5	6	9	11	16	18	23	30
300% 抗拉模數 Tensile modulus *	N/mm ²	53504-S2	8	8	9	13	20	23	34	38	40
彈性模數－張力測試 (測試樣品3mm) Modulus of elasticity	N/mm ²	53457-1						200	250	410	800
撕裂強度 Tear strength	N/mm	53515	60	70	75	95	120	150	170	200	240
摩擦損耗 Abrasion loss	mm ³	53516	40	35	30	30	30	25	25	25	25
室溫壓縮變形率 Compression set	%	53517	25	25	25	25	25	30	40	45	55
70℃壓縮變形率 Compression set	%	53517	35	35	35	45	45	45	50	55	60
凹口衝擊強度 +23℃	kJ/m ²	53453	不破裂	不破裂	不破裂	不破裂	不破裂	不破裂	不破裂	不破裂	不破裂
Notched impact strength (Charpy) -30℃			不破裂	不破裂	不破裂	不破裂	5	6	6	4	3

*S2試片在100mm/min的應變速度下測量

●厚度2或6mm射出試片，在100℃回火20小時後測驗

●上列測驗值僅供參考，常因客戶製品設計而變

●換算單位：1MPa=10.2kg/cm²=145PSI=1N/mm²

1kJ/m²=1.02kg.cm/cm²

加工條件

—射出成形溫度175~240℃

—模溫20~70℃

—押出成形溫度175~230℃



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Antenna Base Polycarbonate

TEIJIN CHEMICALS LTD.

TEIJIN CHEMICALS LTD.
2-2, UCHISAIWAICHO 1-CHOME,
CHIYODA-KU, TOKYO, JAPAN

TELEPHONE: TOKYO (3506) 4780
FACSIMILE: TOKYO (3506) 4780

TO WHOM IT MAY CONCERN

CERTIFICATE OF QUALITY

ITEM	UNIT	TEST METHOD	TEIJIN CHEMICALS QUALITY STANDARD	TEST RESULT
IMPACT STRENGTH (IZOD NOTCHED 3.2mm thick)	kgfcm/cm	ASTM D256	≥ 80	PASS
FLEXURAL MODULUS	kgf/cm ²	ASTM D790	$23,600 \pm 1,600$	PASS
TENSILE STRENGTH (AT BREAK)	kgf/cm ²	ASTM D638	820 ± 140	PASS

NOTE : ALL FIGURES ENTERED IN THIS TABLE ARE FOR THIS SPECIFIC LOT AND. THEREFORE,
NO GUARANTEE.

TEIJIN CHEMICALS LTD.

M. Kikuchi
for Y. KIKUCHI
MANAGER
SALES ADMINISTRATION DEPT.



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Antenna Base Polycarbonate

QMFZ2

Component - Plastics

TEIJIN CHEMICALS LTD

						E50075 (M)				
						(C - cont. from E010 card)				
L-1225LM(d),	All	0.40	94V-2	80	80	80	4	3	2	—
L-1225ZL(d)		0.75	94V-2	80	80	80	3	1	2	—
		1.5	94V-2	125	115	125	3	1	3	—
		2.1	94HB	125	115	125	3	1	3	—
		3.0	94HB	125	115	125	2	1	3	5
		6.0	94HB	125	115	125	1	1	4	—
L-1225LL(d)	All	0.4	94V-2	80	80	80	4	3	2	—
		0.75	94V-2	80	80	80	3	1	2	—
		1.5	94V-2	125	115	125	3	1	3	—
		3.0	94V-2	125	115	125	3	1	3	5
		3.3	94HB	125	115	125	2	1	3	—
		6.0	94HB	125	115	125	1	1	4	—
L-1250#(f2)(d),	All	0.40	94V-2	80	80	80	4	3	2	—
L-1250U#(d),		0.84	94V-2	80	80	80	4	—	4	—
L-1250V#(d),		1.5	94HB	125	115	125	4	0	3	—
L-1250Z#(d)		3.0	94HB	125	115	125	2	0	3	5
		6.0	94HB	125	115	125	1	0	4	—

Reports: February 10, 1989; February 10, 1989; September 24, 1990.

Replaces E50075C dated November 1, 1994.

699748006

N7047

Underwriters Laboratories Inc.®

(Cont. on C005 card)

D11/0032918

QMFZ8

July 28, 1997

Component - Plastics Certified For Canada

TEIJIN CHEMICALS LTD

						E50075 (M)				
						(C - cont. from B card)				
(cc) 10 thru 30 incl.										
(i) A two digit number (10-15) denoting carbon filler content.										
(j) A two digit number (10-40) denoting the total content of carbon fiber and glass fiber.										
ww = A two digit number 10 thru 20 denoting content of carbon filler.										
# Any one or two letters may be suffixed to the grade.										
Marking: Company name and material designation, generic polymer identification, color number where appropriate, and batch or lot number or date of manufacture on container, wrapper or molded on finished part.										

See General Information Preceding These Recognitions.

Small-scale test data does not pertain to building materials, furnishings and related contents. 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.

699748006

Underwriters Laboratories Inc.®

E11/0251459



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Properties of Panlite[®]

Items	Unit	Test Method	Condition	Weather Resistant Grade (SAE approved)		
				L-1225ZL	L-1225Z	L-1250Z
Specific gravity	—	ASTM D792	—	1.20	1.20	~ 1.20
Water absorption	%	ASTM D570	24hr in 23°C water	0.20	0.20	0.20
Light transmission	%	ASTM D1003	3mm thick	88	88	88
Refractive Index	—	ASTM D542	—	1.585	1.585	1.585
Tensile strength	Yield	MPa (kgf/cm ²)	ASTM D638	—	65 (660)	63 (640)
	Break	MPa (kgf/cm ²)	ASTM D638	—	64 (655)	62 (630)
Tensile modulus		MPa (kgf/cm ²)	ASTM D638	—	2,190 (22,300)	2,130 (21,700)
Tensile elongation	Yield	%	ASTM D638	—	6	6
	Break	%	ASTM D638	—	130	140
Flexural strength		MPa (kgf/cm ²)	ASTM D790	—	96 (980)	93 (950)
Flexural modulus		MPa (kgf/cm ²)	ASTM D790	—	2,330 (23,800)	2,260 (23,000)
Compressive strength		MPa (kgf/cm ²)	ASTM D695	—	77 (790)	76 (770)
Impact strength	J/m (kgf-cm/cm)	ASTM D256	Izod notched 3.2mm thick	100 (10)	830 (85)	880 (90)
	J/m (kgf-cm/cm)	ASTM D256	Izod notched 6.4mm thick	50 (5)	130 (13)	140 (14)
Rockwell hardness	—	ASTM D785	M scale	77	77	77
Mold shrinkage	%	ASTM D955	Flow direction	0.5~0.7	0.5~0.7	0.5~0.7
			Traverse direction	0.5~0.7	0.5~0.7	0.5~0.7
Heat distortion temperature	°C	ASTM D648	Load 0.451 MPa (4.6 kgf/cm ²)	138	141	142
			Load 1.813 MPa (18.6 kgf/cm ²)	128	131	132
Coefficient of linear expansion	× 10 ⁻⁵ cm/cm/°C	ASTM D696	Flow direction	7	7	7
			Traverse direction	7	7	7
Dielectric breakdown strength	kV/mm	ASTM D149	Quick voltage rise method 1.6mm thick	30	30	30
Volume resistivity	× 10 ⁹ Ω-cm	ASTM D257	—	3	3	3
Dielectric constant	—	ASTM D150	60 Hz	2.95	2.95	2.95
			10 ⁶ Hz	2.9	2.9	2.9
Dielectric loss tangent	—	ASTM D150	60 Hz	0.0004	0.0004	0.0004
			10 ⁶ Hz	0.009	0.009	0.009
Arc resistance	sec	ASTM D495	—	100	100	100
Anti-tracking (CTI)	V	IEC 112	—	300	300	300
Flame resistance	—	UL 94	1.47 mm thick	94V-2	94V-2	94V-2
			3.05 mm thick	94V-2	94V-2	94V-2
Temperature Index	°C	UL 746B	Electric 1.47 mm thick	125	125	125
			Impact 1.47 mm thick	115	115	115
			Non-impact 1.47 mm thick	125	125	125

All figures entered in this table are the typical figures and, therefore, no guarantee is made.



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Grades of **Panlite**

Grades	Viscosity	Characteristics	Main molding methods	Principal applications
K-1300	High	Standard	Extruding/blow molding/ injection molding	• Sheet, film, pipe and other extruded products. • Bottles and other direct blow molded products. • Large tanks and other rotational molded products.
K-1300Y	-	Mold release/ice color	Extruding/blow molding/ injection molding	
K-1300Z	-	Weather resistance/ ice color	Extruding/blow molding/ injection molding	
K-1300W	-	Powder	Extruding/rotational molding	
K-1285	-	Standard	Extruding/blow molding/ injection molding	
L-1250	Medium	Standard	Injection molding	• Machine parts, electric and electronics appliance parts, medical apparatuses, protective equipment parts, industrial parts in general. • Lighting fixture parts requiring transparency and heat resistance. • Table wares and mechanical parts requiring cold and heat resistance.
L-1250R	-	Mold release	Injection molding	
L-1250Y	-	Mold release/ice color	Injection molding	
L-1250Z	-	Weather resistance/ ice color	Injection molding	
L-1250J	-	Boiling water resistance	Injection molding	
L-1250T	-	Boiling water resistance/mold release/ice color	Injection molding	• Large tanks and other rotational molded products. • Thin-wall products requiring high flowability, electric & electronics appliance parts, machine parts, protective equipment parts, medical apparatuses, lighting fixtures, lamp shade, table wares and containers. • Suitable for injection blow molding uses.
L-1250W	-	Powder	Injection molding/ rotational molding	
L-1225	Low	Standard	Injection molding	
L-1225R	-	Mold release	Injection molding/ injection blow molding	
L-1225Y	-	Mold release/ice color	Injection molding/ injection blow molding	
L-1225Z	-	Weather resistance/ ice color	Injection molding	• Ultra-thin wall parts of electric & electronics appliances. • Ultra-thin lamp lenses. • Compact disks, CD-ROM, optical lenses.
L-1225J	-	Boiling water resistance	Injection molding	
L-1225T	-	Boiling water resistance/mold release/ice color	Injection molding/injection blow molding	
L-1225W	-	Powder	Injection molding/ rotational molding	
L-1225L	Ultra low	Mold release/ice color	Injection molding	
L-1225ZL 100	-	Mold release/ weather resistance/ ice color	injection molding	
AD-5503	-	Optical properties/ low contamination	Injection molding	



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