

亞 驪 企 業 股 份 有 限 公 司
ARISTOTLE ENTERPRISES

承 認 申 請 書

ROHS COMPLIANCE

客戶名稱: 虹堡科技股份有限公司
Customer
廠商料號: RFAS87-PT1000G-12009
Part No.
品名: L=2M
Description
圖號: RFAS87-PT1000G-12009
Drawing No.
客戶料號: 311600204000
Drawing No.

出廠簽章:

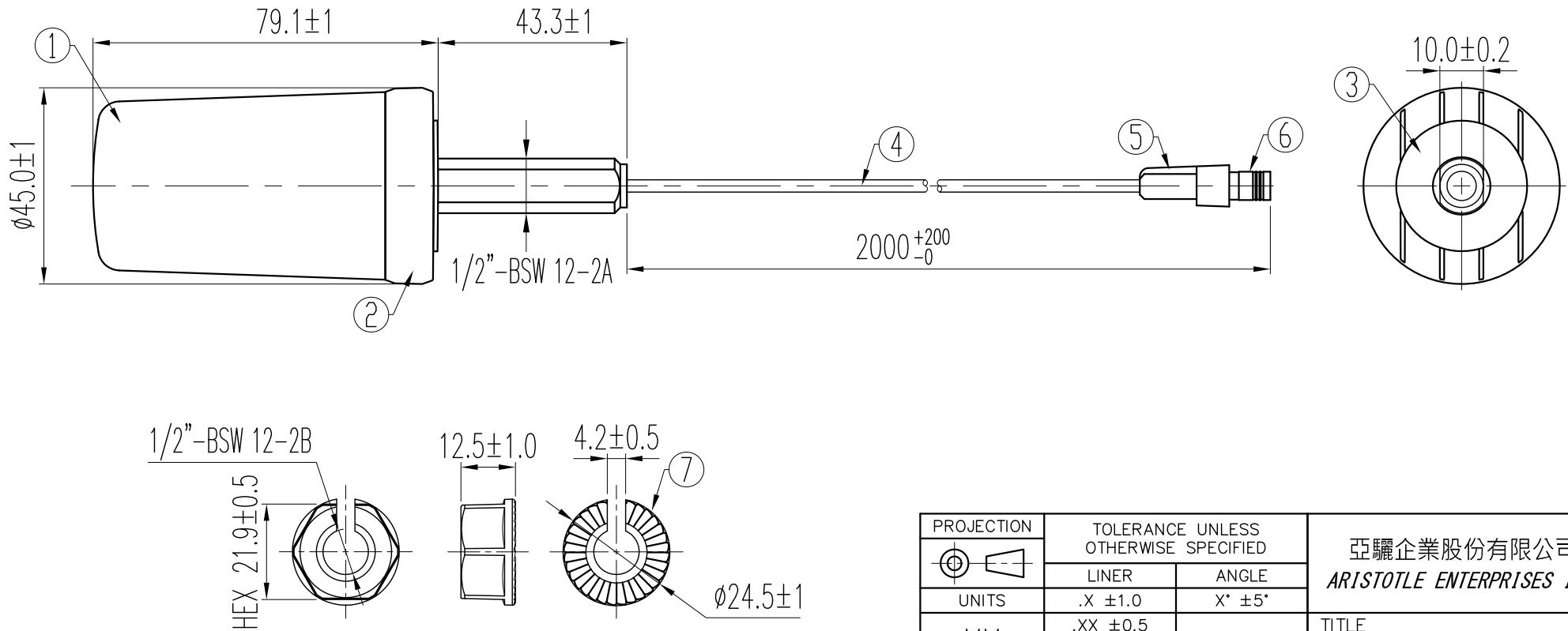
檢 查 TEST BY	核 對 CHECK BY	承 認 APPROVE BY
方美鑾	傅千玲	廖煥文

承認簽章:

檢 查 TEST BY	核 對 CHECK BY	承 認 APPROVE BY

地址:新北市中和區莒光路 63 號 8 樓
電話:02-2225-8209
傳真:02-2225-7523

NO.	NAME	FINSH	MAT'L	Q'TY	MEMO
1.	Tube	Black	PC	1	
2.	Base	Black	Nylon	1	
3.	Ruber Pad	Black	Ruber	1	
4.	Cable	Black	--	1	ULA100
5.	SR	Black	PVC	1	
6.	SMB PLUG	Plated Gold	Brass	1	
7.	Nut	Black	Nylon	1	



PROJECTION		TOLERANCE UNLESS OTHERWISE SPECIFIED		亞驪企業股份有限公司 ARISTOTLE ENTERPRISES INC.	
		LINER	ANGLE		
UNITS		.X ±1.0	X° ±5°	TITLE	
MM		.XX ±0.5		RFAS87-PT1000G-12009	
		.XXX ±0.2		DWG NO.	
				RFAS87-PT1000G-12009	

REV.	ECN.	NAME	DATE
3.			
2.			
1.			

REV.	A	APPD.		
SHEET	1/1	CHKD.		
SIZE	SCALE	DESIGN		
A4	1:1	DRAW	張鴻偉	2022/12/1

FAI Report

[illegible]

產品照片&單重



單重:80.8g

Antenna Type : monopole

RFAS87-PT1000G-12009

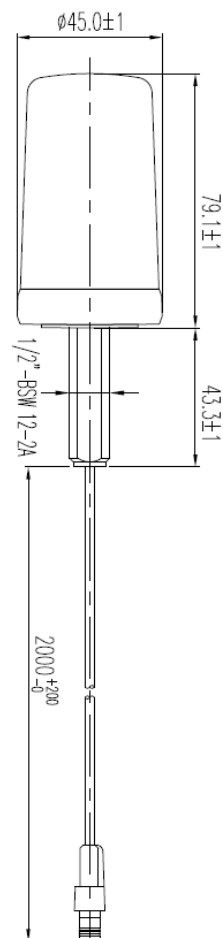
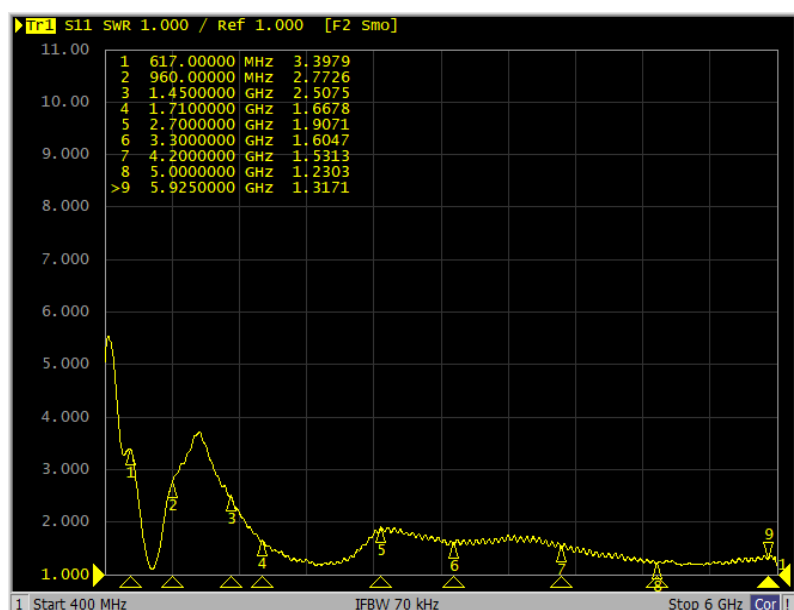
Specifications

Frequency range	617-960 MHz	1452-1474 MHz	1710-2200 MHz	2300-2690 MHz	3300-5000 MHz	5150-5925 MHz
Peak gain	3.89 dBi	1.88 dBi	2.53 dBi	2.2 dBi	1.36 dBi	1.58 dBi
Average gain	-1.46 dBi	-3.25 dBi	-2.57 dBi	-3.1 dBi	-3.79 dBi	-4.81 dBi
VSWR	4.0 : 1 Max.	3.5 : 1 Max.	2.5 : 1 Max.	2.5 : 1 Max.	2.5 : 1 Max.	2.5 : 1 Max.
Polarization	Linear, vertical					
Impedance	50 Ω					
Cable	ULA100					
Cable Length	2M					
Connector	SMB PLUG					

Environment & Mechanical Characteristics

Temperature	- 40°C to +85°C
Humidity	95% @ 25°C

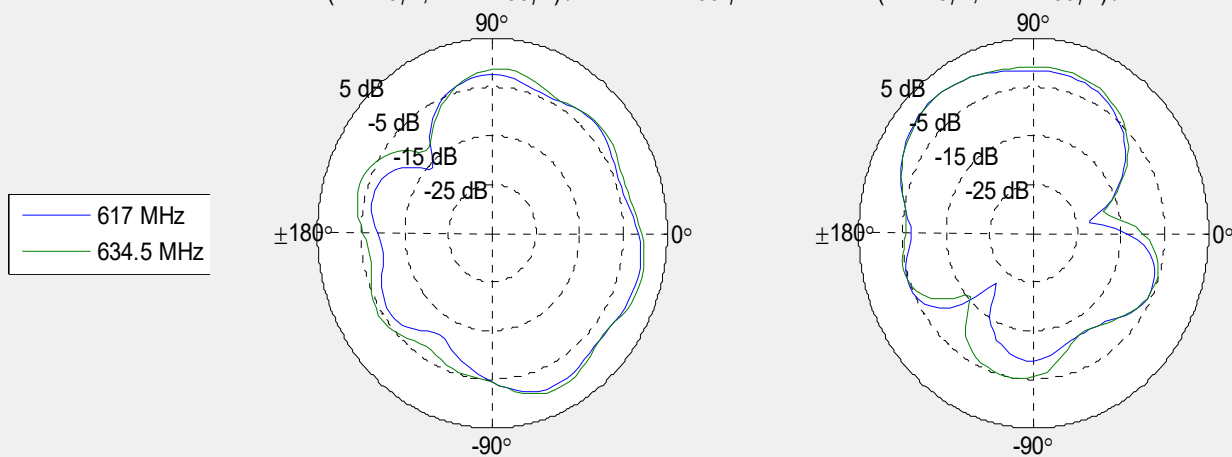
VSWR



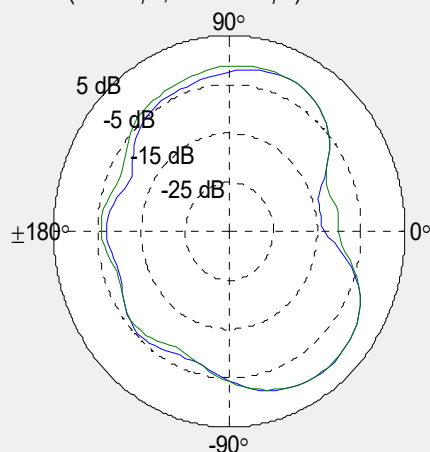
Radiation Pattern

SUB6G-L1- = 600 - 651 MHz

XY Plane (+X = 0°X, +Y = +90°X) / Elevation = 90°X ZX Plane (+Z = 0°X, +X = +90°X) / Azimuth = 0°X



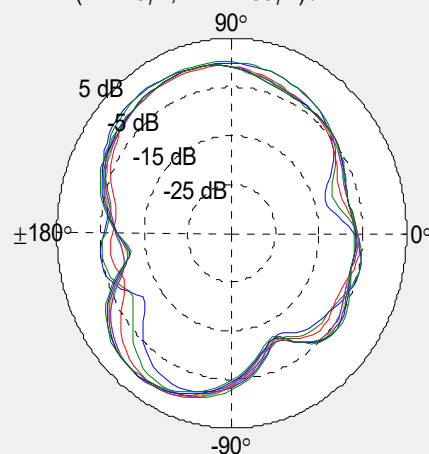
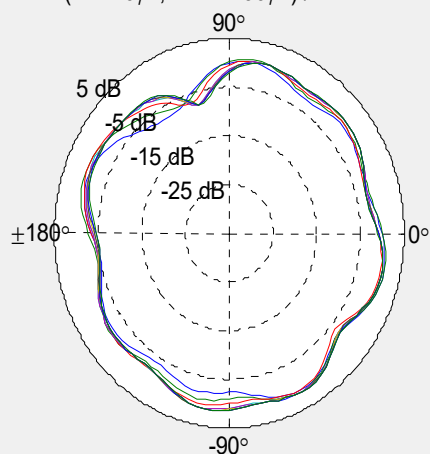
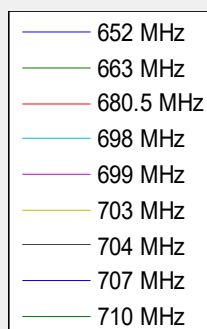
YZ Plane (+Z = 0°X, +Y = +90°X) / Azimuth = 90°X



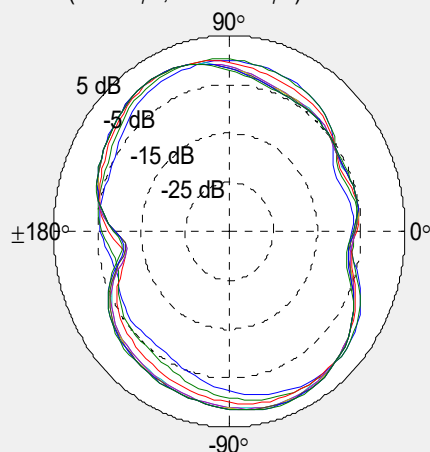
Radiation Pattern

SUB6G-L1-1 = 652 - 710 MHz

XY Plane (+X = 0°X, +Y = +90°X) / Elevation = 90°X ZX Plane (+Z = 0°X, +X = +90°X) / Azimuth = 0°X



YZ Plane (+Z = 0°X, +Y = +90°X) / Azimuth = 90°X

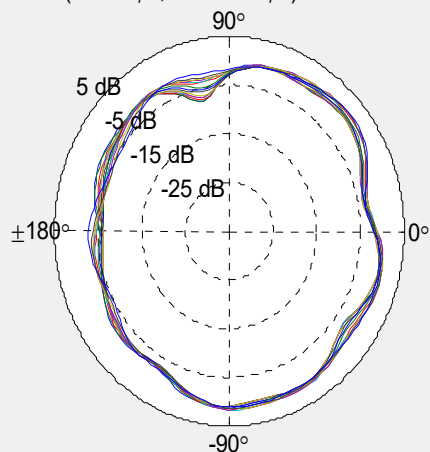


Radiation Pattern

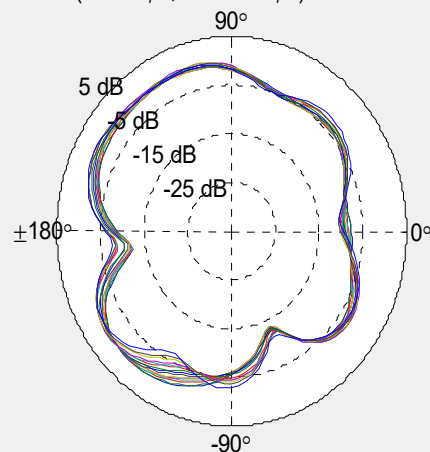
SUB6G-L1-2 = 716 - 763 MHz

- 716 MHz
- 717 MHz
- 722.5 MHz
- 725.5 MHz
- 728 MHz
- 729 MHz
- 734 MHz
- 737 MHz
- 740 MHz
- 746 MHz
- 748 MHz
- 751 MHz
- 756 MHz
- 758 MHz
- 763 MHz

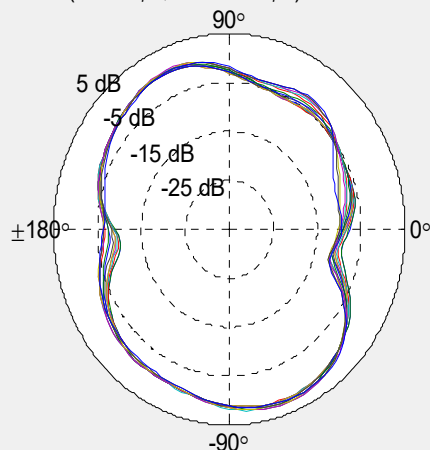
XY Plane (+X = 0°X, +Y = +90°X) / Elevation = 90°X



ZX Plane (+Z = 0°X, +X = +90°X) / Azimuth = 0°X



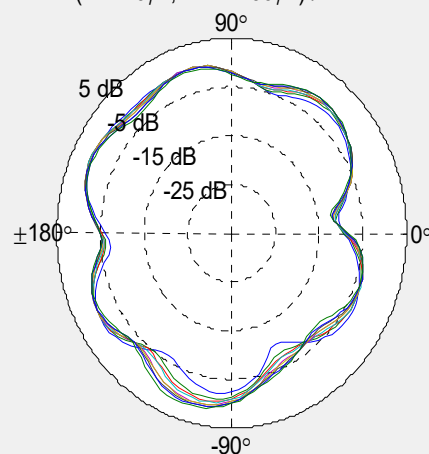
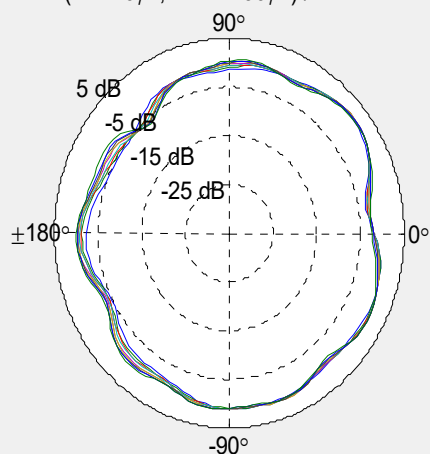
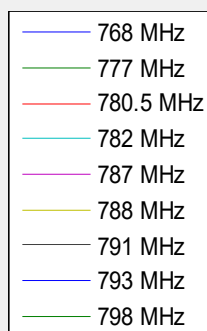
YZ Plane (+Z = 0°X, +Y = +90°X) / Azimuth = 90°X



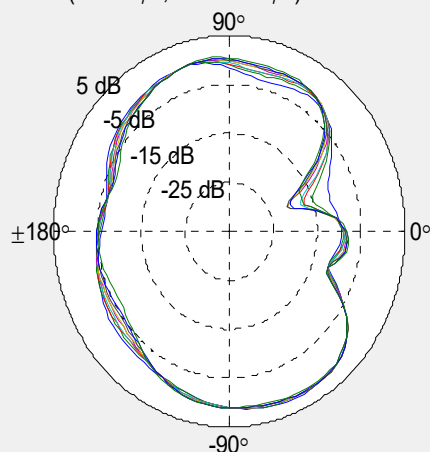
Radiation Pattern

SUB6G-L1-3 = 768 - 798 MHz

XY Plane (+X = 0°X, +Y = +90°X) / Elevation = 90°X ZX Plane (+Z = 0°X, +X = +90°X) / Azimuth = 0°X

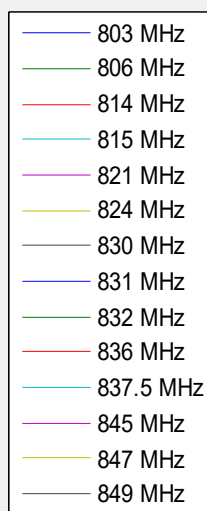


YZ Plane (+Z = 0°X, +Y = +90°X) / Azimuth = 90°X

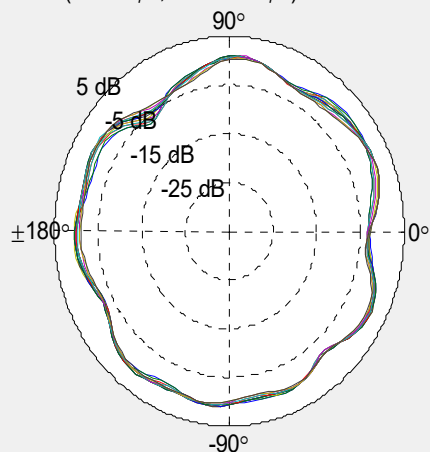


Radiation Pattern

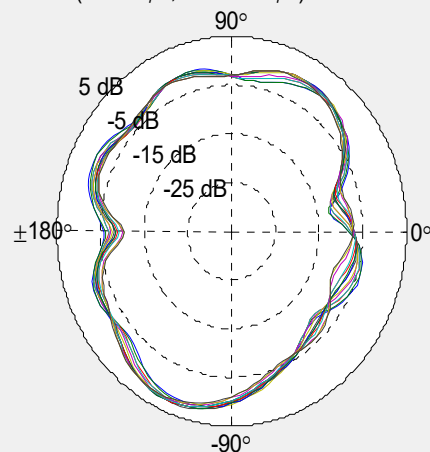
SUB6G-L2-1 = 803 - 849 MHz



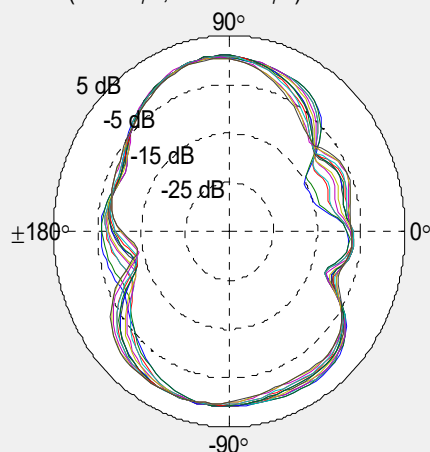
XY Plane (+X = 0°X, +Y = +90°X) / Elevation = 90°X



ZX Plane (+Z = 0°X, +X = +90°X) / Azimuth = 0°X



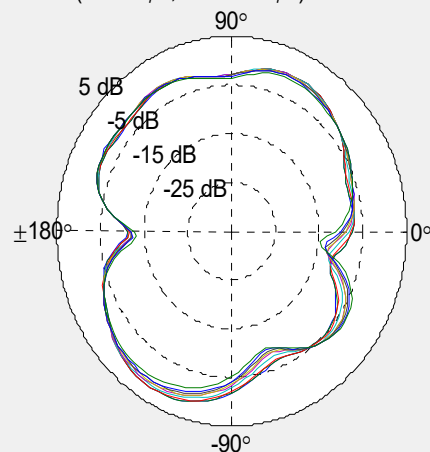
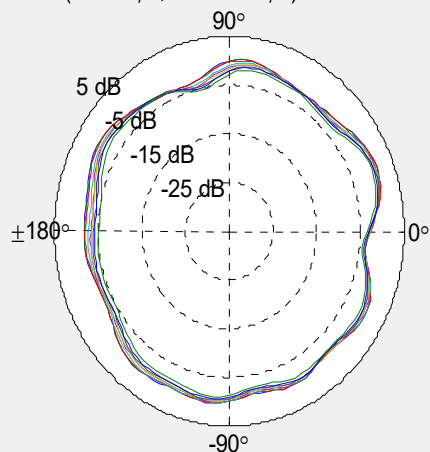
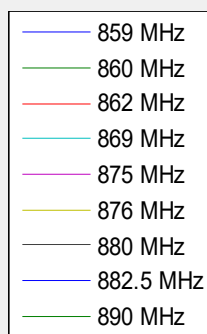
YZ Plane (+Z = 0°X, +Y = +90°X) / Azimuth = 90°X



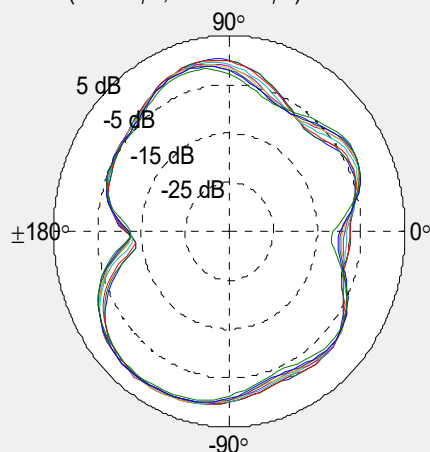
Radiation Pattern

SUB6G-L2-2 = 859 - 890 MHz

XY Plane (+X = 0°X, +Y = +90°X) / Elevation = 90°X ZX Plane (+Z = 0°X, +X = +90°X) / Azimuth = 0°X



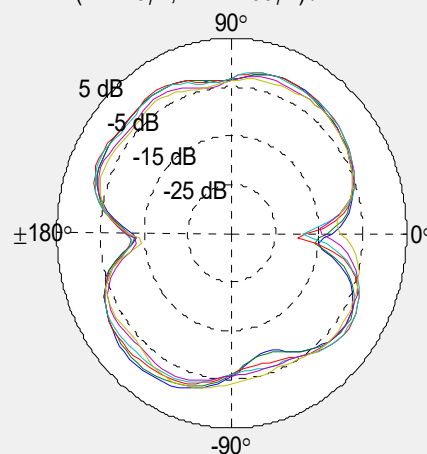
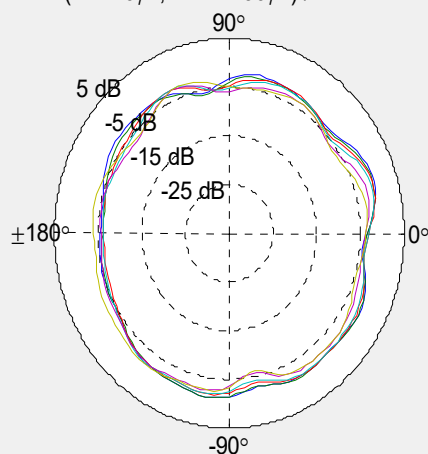
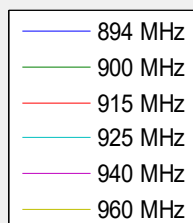
YZ Plane (+Z = 0°X, +Y = +90°X) / Azimuth = 90°X



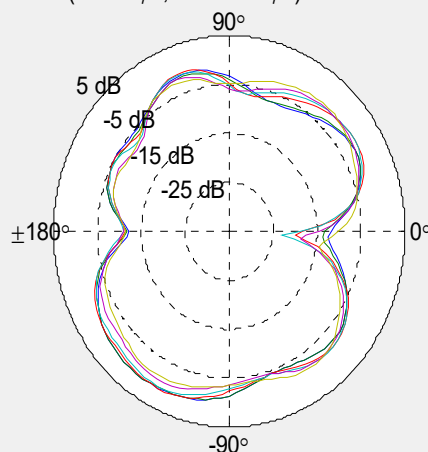
Radiation Pattern

SUB6G-L2-3 = 894 - 960 MHz

XY Plane (+X = 0°X, +Y = +90°X) / Elevation = 90°X ZX Plane (+Z = 0°X, +X = +90°X) / Azimuth = 0°X



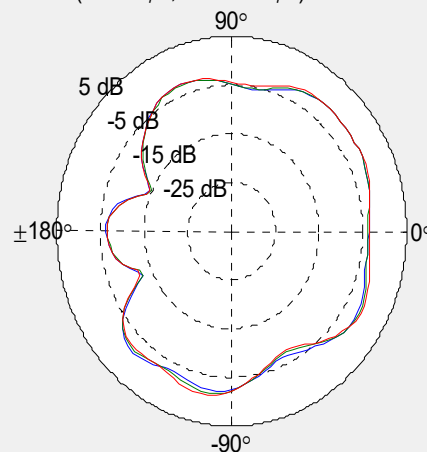
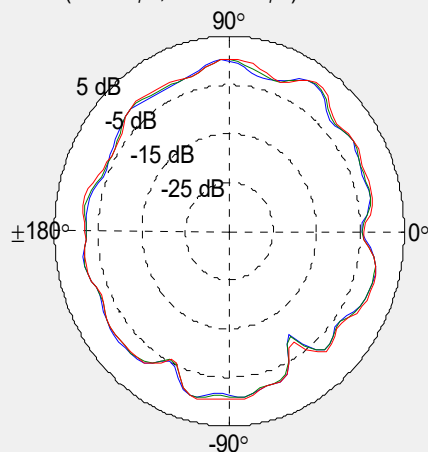
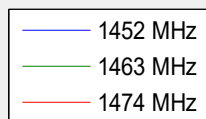
YZ Plane (+Z = 0°X, +Y = +90°X) / Azimuth = 90°X



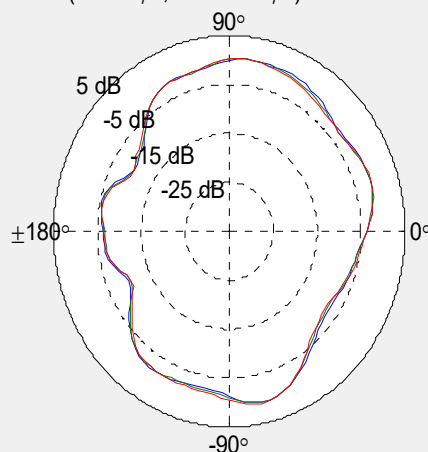
Radiation Pattern

SUB6G-GPS = 1000 - 1680 MHz

XY Plane (+X = 0°X, +Y = +90°X) / Elevation = 90°X ZX Plane (+Z = 0°X, +X = +90°X) / Azimuth = 0°X



YZ Plane (+Z = 0°X, +Y = +90°X) / Azimuth = 90°X

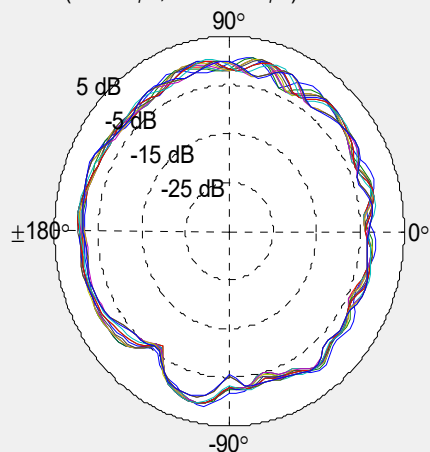


Radiation Pattern

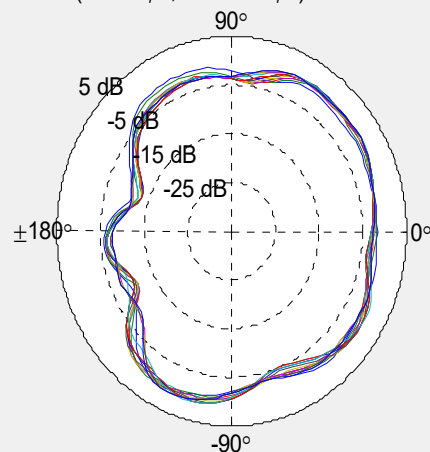
SUB6G-H1-1 = 1710 - 1850 MHz

- 1/10 MHz
- 1730 MHz
- 1745 MHz
- 1747.5 MHz
- 1749.9 MHz
- 1755 MHz
- 1767.4 MHz
- 1780 MHz
- 1784.9 MHz
- 1785 MHz
- 1805 MHz
- 1840 MHz
- 1842.5 MHz
- 1844.9 MHz
- 1850 MHz

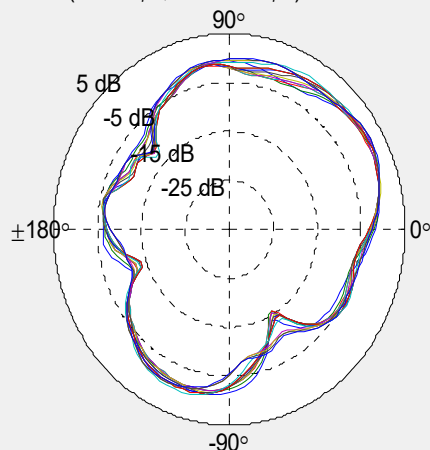
XY Plane (+X = 0°X, +Y = +90°X) / Elevation = 90°X



ZX Plane (+Z = 0°X, +X = +90°X) / Azimuth = 0°X

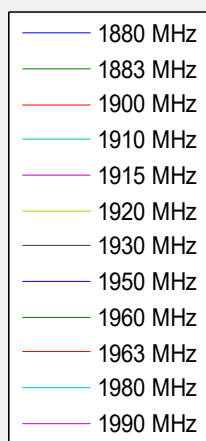


YZ Plane (+Z = 0°X, +Y = +90°X) / Azimuth = 90°X

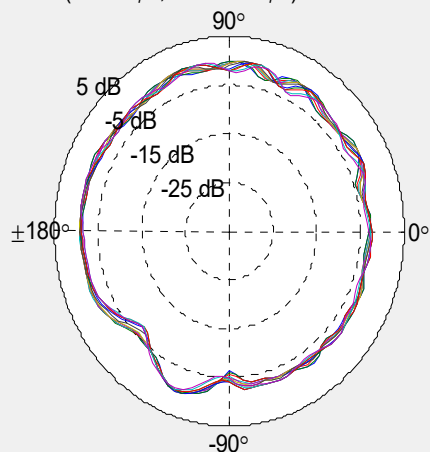


Radiation Pattern

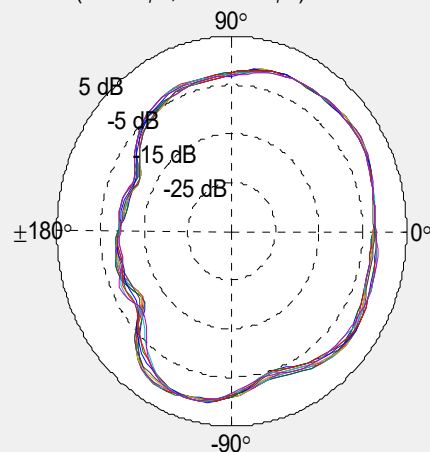
SUB6G-H1-2 = 1880 - 1990 MHz



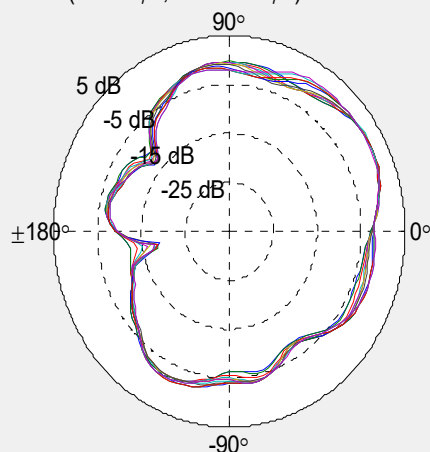
XY Plane (+X = 0°X, +Y = +90°X) / Elevation = 90°X



ZX Plane (+Z = 0°X, +X = +90°X) / Azimuth = 0°X



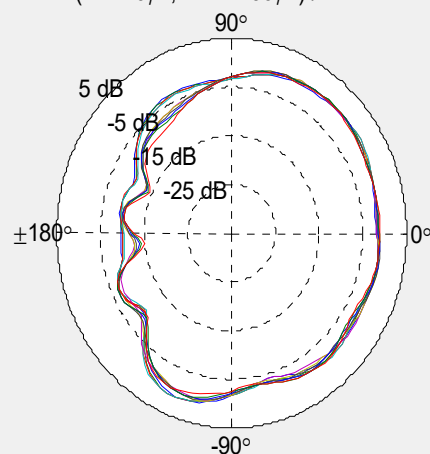
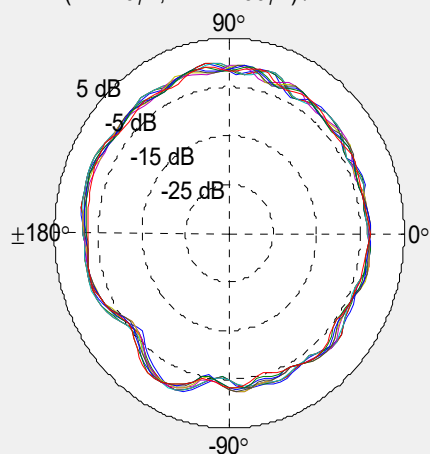
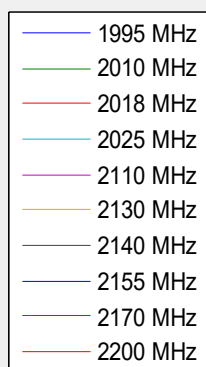
YZ Plane (+Z = 0°X, +Y = +90°X) / Azimuth = 90°X



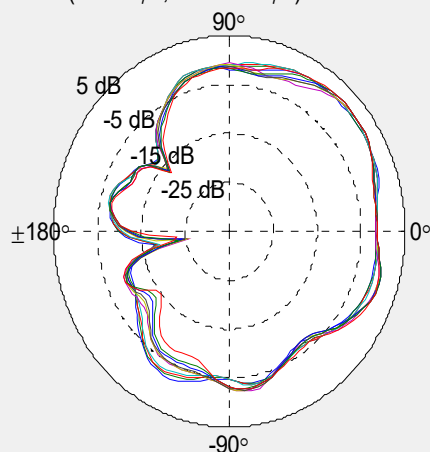
Radiation Pattern

SUB6G-H1-3 = 1995 - 2200 MHz

XY Plane (+X = 0°X, +Y = +90°X) / Elevation = 90°X ZX Plane (+Z = 0°X, +X = +90°X) / Azimuth = 0°X



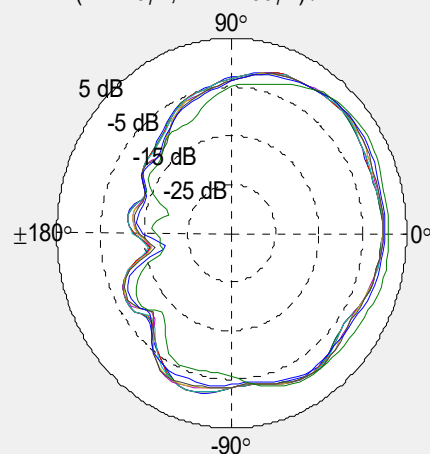
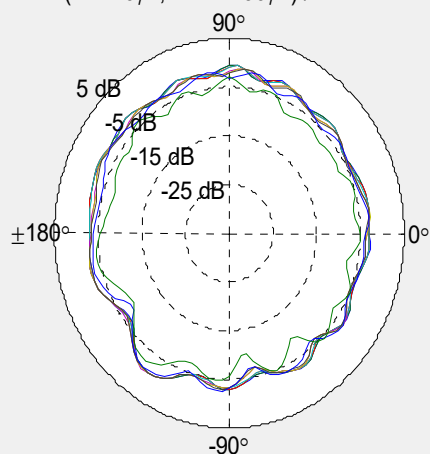
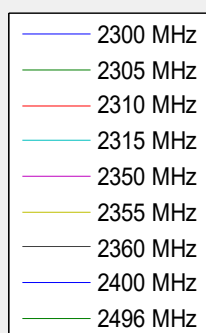
YZ Plane (+Z = 0°X, +Y = +90°X) / Azimuth = 90°X



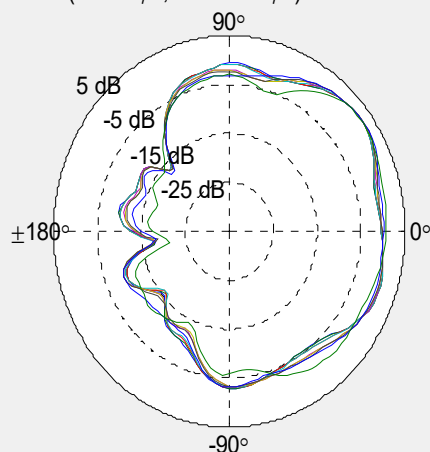
Radiation Pattern

SUB6G-H2-1 = 2300 - 2496 MHz

XY Plane (+X = 0°X, +Y = +90°X) / Elevation = 90°X ZX Plane (+Z = 0°X, +X = +90°X) / Azimuth = 0°X



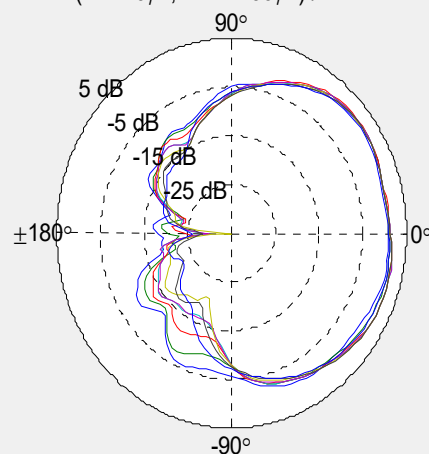
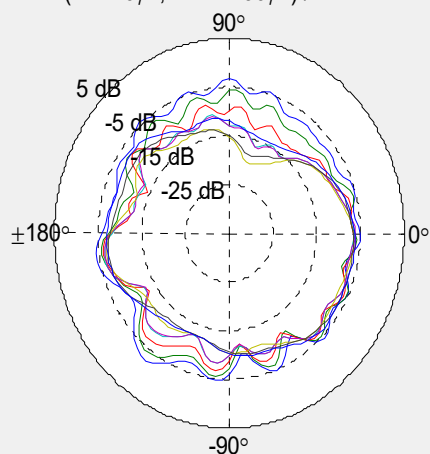
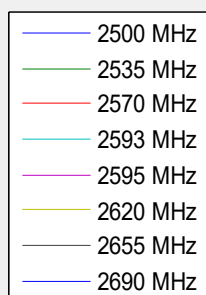
YZ Plane (+Z = 0°X, +Y = +90°X) / Azimuth = 90°X



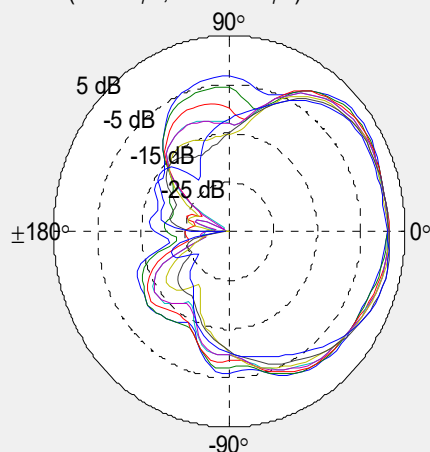
Radiation Pattern

SUB6G-H2-2 = 2500 - 2690 MHz

XY Plane (+X = 0°X, +Y = +90°X) / Elevation = 90°X ZX Plane (+Z = 0°X, +X = +90°X) / Azimuth = 0°X

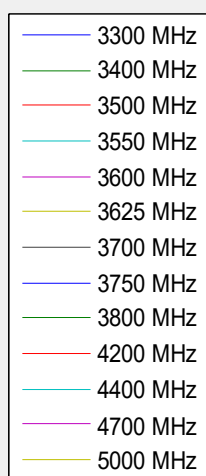


YZ Plane (+Z = 0°X, +Y = +90°X) / Azimuth = 90°X

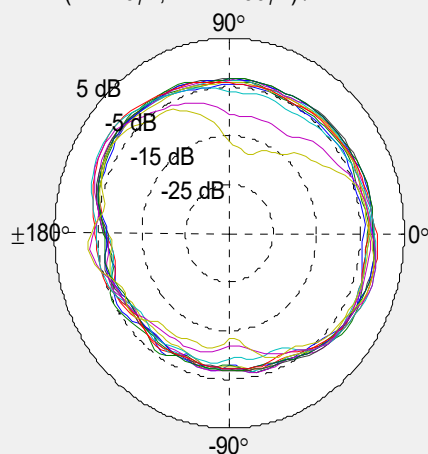


Radiation Pattern

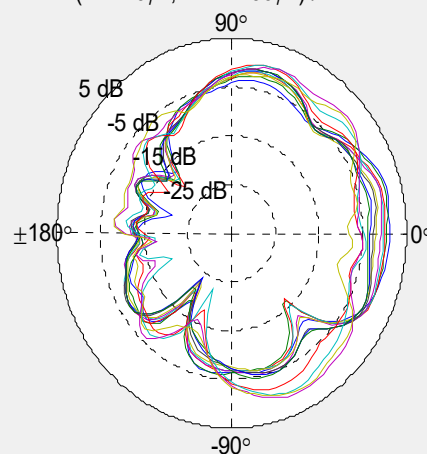
SUB6G-SHF-3 = 3000 - 5000 MHz



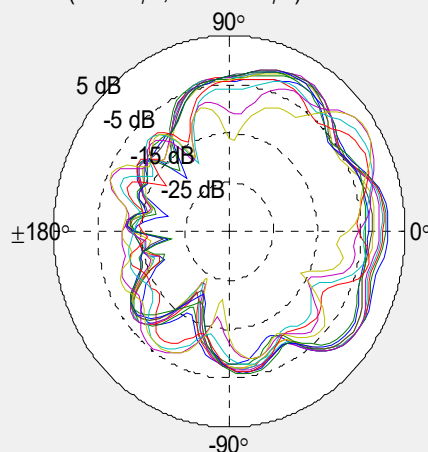
XY Plane (+X = 0°X, +Y = +90°X) / Elevation = 90°X



ZX Plane (+Z = 0°X, +X = +90°X) / Azimuth = 0°X



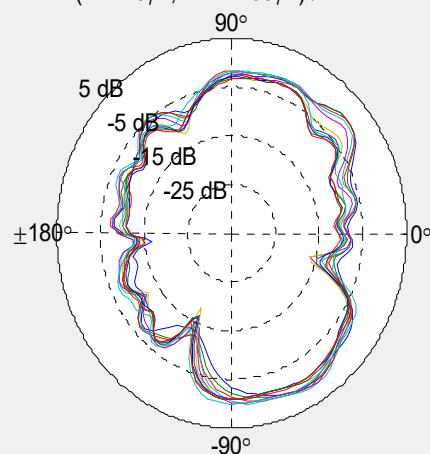
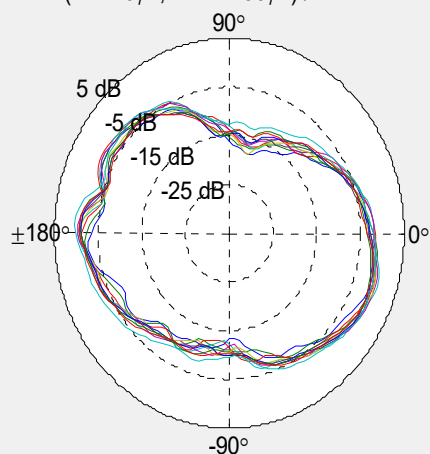
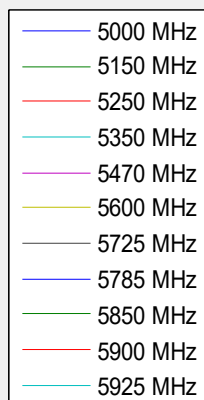
YZ Plane (+Z = 0°X, +Y = +90°X) / Azimuth = 90°X



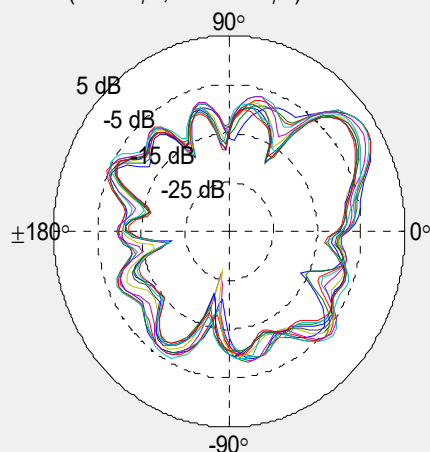
Radiation Pattern

5G Band = 4900 - 5975 MHz

XY Plane (+X = 0°X, +Y = +90°X) / Elevation = 90°X ZX Plane (+Z = 0°X, +X = +90°X) / Azimuth = 0°X



YZ Plane (+Z = 0°X, +Y = +90°X) / Azimuth = 90°X



亞驪企業股份有限公司

文件編號		文件名稱	C606_RFAS87-PT1000G-12009			發行版本	A	頁次	1/1
客戶代號：	C606	最小包裝	PCS	1					
客戶料號/品名：	311600204000	中包裝	PCS	10					
亞驪料號/品名：	RFAS87-PT1000G-12009	大包裝	PCS	120					
相關配件		備註							

1. 最小包裝(1PCS-夾鏈袋)



示意圖

2. 中包裝(10PCS-PE 袋)



示意圖

3. 大包裝(120PCS-1 箱)



示意圖



NAN YA PLASTICS CORPORATION
ELECTRONIC MATERIALS DIVISION.
COPPER CLAD LAMINATE DEPARTMENT

**Glass cloth base epoxy resin
flame retardant copper clad laminate**

NO. 201, TUNG HWA N. ROAD,
TAIPEI, TAIWAN.

NP-140TL

■ FEATURES

- Multi-functional epoxy renders the material outstanding heat resistance, better dimensional stability, and through-hole reliability that benefit the performance of high layer count multilayer boards.
- HTE copper foil applied to prevent corner cracking.
- High luminance of epoxy contrast with copper for laser type A.O.I.
- UV solder mask may be applied simultaneously in order to increase yields.
- IPC-4101B specification is applicable.

■ PERFORMANCE LIST

Characteristics	Unit	Conditioning	Typical Values	SPEC	Test Method
Volume resistivity	MΩ-cm	C-96/35/90	5.0×10^9	$10^6 \uparrow$	2.5.17
Surface resistivity	MΩ	C-96/35/90	5.0×10^7	$10^4 \uparrow$	2.5.17
Permittivity 1 MHZ	-	C-24/23/50	4.2-4.4	5.4 ↓	2.5.5.9
Permittivity 1 GHZ	-	C-24/23/50	3.8-4.0	-	2.5.5.9
Loss Tangent 1 MHZ	-	C-24/23/50	0.015-0.020	0.035 ↓	2.5.5.9
Loss Tangent 1 GHZ	-	C-24/23/50	0.012-0.014	-	2.5.5.9
Arc resistance	SEC	D-48/50+D-0.5/23	120 ↑	60 ↑	2.5.1
Dielectric breakdown	KV	D-48/50	60 ↑	40 ↑	2.5.6
Moisture absorption	%	D-24/23	0.20-0.30	0.35 ↓	2.6.2.1
Flammability	-	C-24/23/50+E-24/125	94V0	94V0	UL94
Peel strength 1 oz	lb/in	288°Cx10" solder floating	10-14	6 ↑	2.4.8
Thermal stress	SEC	288°C solder dipping	90 ↑	10 ↑	2.4.13.1
Glass transition temp	°C	DSC	140 ± 5	N/A	2.4.25
Dimensional stability X-Y axis	%	E 4/105	0.01-0.03	0.05 ↓	2.4.39
Coefficient of thermal expansion	ppm/°C	TMA	50-70	N/A	2.4.24
Z-axis before Tg	ppm/°C	TMA	250-350		
Z-axis after Tg					

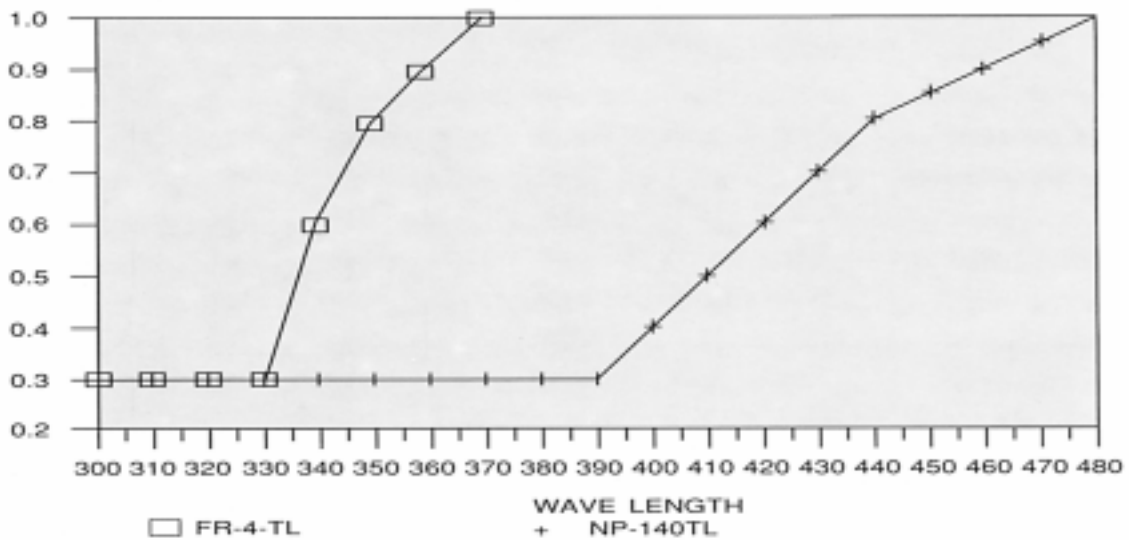
Data shown are nominal values for reference only.

NOTE:

The average value in the table refers to samples of .020" 1/1.

Test method per IPC-TM-650

■ UV TRANSMISSION CURVE OF 0.2mm CCL



■ PRODUCT SIZE & THICKNESS

THICKNESS INCH(mm)	COPPER CLADDING OZ (μm)	SIZE		THICKNESS TOLERANCE
		INCH	mm	
0.004 (0.1)	0.5 (17)	48.8 x 36.6	1240 x 0930	CLASS C/M
to	1.0 (35)	48.8 x 40.5	1240 x 1030	
0.047(1.2)	2.0 (70)	48.8 x 42.5	1240 x 1080	

■ Keeping the core and prepreg in the same grain direction is crucial to ensure the flatness of multilayer boards.

Grain direction is shown on the Certificate of Conformance

■ CERTIFICATION UL

• UL File No. : E98983

■ CONSTRUCTION:

THICKNESS		CONSTRUCTION
mm	mil	
0.08	3	2112 1 ply
0.10	4	1080 2 plies
0.11	4	2116 1 ply
0.13	5	1080 2 plies
0.13sp	5	2116 1 ply
0.15	6	1506 1 ply
0.16	6	2112 2 plies
0.21	8	7628 1 ply
0.26	10	2116 2 plies
0.30	12	2116 3 plies
0.30sp	12	1506 2 plies
0.35	14	7628 2 plies
0.38	15	7628 2 plies

THICKNESS		CONSTRUCTION
mm	mil	
0.45	18	7628 x 2 + 1080 x 1
0.46	18	7667 2 plies
0.50	20	7628 3 plies
0.53	21	7628 3 plies
0.60	24	7628 3 plies
0.77	31	7628 4 plies
0.8	32	7628 4 plies
0.9	36	7628 5 plies
1.0	39	7628 5 plies
1.1	43	7628 6 plies
1.2	47	7628 6 plies

*1.2,1.1,1.0,0.9,0.77 mm, THICKNESS INCLUDES CLADDING. ALL OTHERS EXCLUDE CLADDING.

世通國際光電股份有限公司



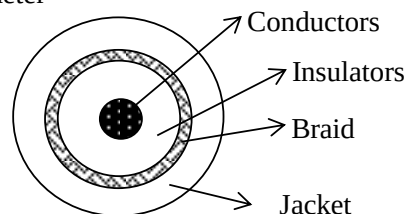
桃園市龍潭區中原路二段1號

電話：03-4716558

CABLE SPECIFICATION (線材規格書)

SPEC No :	0.5BC+FOIL+6/0.10T*16						
Customer	亞驪	Customer NO.	C1293			樣單號碼 :	
UL File NO.		UL Style :		Date :	2019.12.6	電腦編號 :	
CSA File NO		CSA Style :		版本 :	1	業務編號 :	
Construction Item 結構項目			結構項目				
Conductors 導體	Construction AWG(構造線規)	AWG	24AWG(0.5±0.008mm)				
	Material (導體材質)	-----	Bare Copper Wire				
	Pitch(絞距)	mm	-----				
	Filler Material (填充材質)	-----	-----				
	O.D.(絞合外徑)	mm	0.5mm				
Insulators 絕緣	Material (絕緣材質)	-----	PEF				
	Diameter (芯線線徑)	mm	1.52±0.1mm				
	Average Thickness (平均厚度)	mm	0.51±0.05mm				
	Color (顏色)	-----	Natural				
Inner - Shield 內部 遮蔽	Shield(遮蔽方式)	-----	Aluminum Mylar				
	Construction AWG(構造線規)	-----	-----				
	Material (導體材質)	-----	-----				
	Coverage(遮蔽率)	%	125%				
Outside- Shield 遮蔽	Shield(遮蔽方式)	-----	Braid				
	Construction AWG(構造線規)	-----	38AWG				
	Conductors Size (導體尺寸)	mm	16/6/0.1T				
	Material (導體材質)	-----	Tinned Copper Wire				
	Coverage(遮蔽率)	%	95%				
Outside Jacket 外部 被覆	Material (材質)	-----	PE				
	Diameter (線徑)	mm	2.79±0.1mm				
	Average Thickness (平均厚度)	mm	0.44±0.05mm				
	Extrusion (押出方式)	-----	Solid				
	Surface (外觀)	-----	Round				
	Color (顏色)	-----	Black				
	Marking Color (印字顏色)	-----	White				
Marking 印字	Marking No.(印字)	Low Loss 100 COAXIAL CABLE					

Bending radius :20Time of cable outside diameter



頻率/M/Hz	30	50	150	220	450	900	1500	1800	2000	2500
dB	0.146	0.181	0.287	0.344	0.495	0.737	0.958	1.06	1.11	1.27

唯紘塑膠工業有限公司

品 名：低毒45P外模PVC膠粒

主 原 料：PVC粉・DPHP〈可塑劑〉・EPOXY .滑劑
鈣鋅系安定劑 . CCR膠鈣。

規格物性表

硬 度	45 PHR
耐 老 化	7 0 度
耐 脆 化	- 10 度
伸 長 率	150%
抗 張 強 度	1.6 kg/mm*mm
比 重	1.41
耐 燃 等 級	HB
LOI 值	24
ROHS	CE-2014-31928
REACH	CC-2014-30070B



Technical Data Sheet

XIAMETER™ RBB-6671-70 Base

70 Durometer, molding, general purpose, uncatalyzed silicone rubber base

Features & Benefits

- 70 JIS-Type A hardness
- Good processability
- Serviceable over wide temperature range
- Pigmentable (translucent color)
- Formulated to meet FDA 21 CFR 177.2600 and BfR XV
- UL-94 HB recognized
- Suitable for both addition reaction and peroxide cure system

Composition

- Silicone rubber (HCR)
- Uncatalyzed stock (U-stock)

Applications

- Molding
- Consumer goods
- Keypads
- Rollers
- Packings, gaskets
- Consumer electronics
- Sheets
- Food contacts

Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

Test ¹	Property	Unit	Result
	As supplied		
	Appearance		Milky white translucent
JIS K 6249	Plasticity	mm/100	260

1. JIS: Japanese Industrial Standard.

Properties obtained using 0.5 part of SILASTIC™ RC-4 50P FD Rubber Additive (2,5-bis(tert-butylperoxy)-2,5-dimethyl hexane, 50% masterbatch) per 100 parts of XIAMETER™ RBB-6671-70 Base: molded 10 minutes at 170°C (338°F) and post-cured 4 hours at 200°C (392°F).

Typical Properties (Cont.)

Test	Property	Unit	Result
As cured			
JIS K 6249	Density	g/cm ³	1.19
JIS K 6249	Durometer Hardness, JIS type A		70
JIS K 6249	Tensile strength, JIS#3	MPa	7.6
JIS K 6249	Elongation, JIS#3	%	320
JIS K 6249	Modulus at 100% elongation, JIS#3	MPa	2.93
JIS K 6249	Tear strength, crescent	N/mm	10
JIS K 6249	Tear strength, angle	N/mm	25
JIS K 6249	Linear shrinkage, disc ²	%	3.4
JIS K 6249	Rebound, Lupke	%	55
JIS K 6249	Compression set, 180°C /22h	%	22
JIS K 6249	Dielectric strength	kV/mm	26
JIS K 6249	Volume resistance	TΩ·m	2

2. Linear shrinkage depends on the curing conditions such as type of curing agent, curing temperature and size of molded product.

How to Use

Milling

For adding vulcanizing agents, additives, and / or pigments or blending, milling with a two-roll mill is the most suitable process. Milling time should be carefully decided to secure uniformity of materials.

Vulcanization

XIAMETER™ RBB-6671-70 Base requires the addition of a vulcanizing agent. SILASTIC™ RC-4 50P FD Rubber Additive is recommended for molding. Standard cure temperature is 170°C (338°F), and its cure time depends on the thickness of final products. Post-cure condition would be 4 hours at 200°C (392°F) after molding in most cases.

The addition reaction curing agents and other SILASTIC™ curing agents are also available for vulcanization.

Compounding

XIAMETER™ RBB-6671-70 Base can be blended with other bases to modify the durometer of the compound. The physical properties of this product can be modified using a range of SILASTIC™ or XIAMETER™ additives. Further, XIAMETER™ RBB-6671-70 Base can be pigmented to almost any color shade desired.

Food Contact

This product has been formulated to meet applicable food contact regulations and recommendations like FDA 21.CFR 177.2600 and BfR Recommendation XV.

Note: It remains the manufacturers' responsibility to test the final product.

For further details on the suitability of this product for food contact applications, please refer to the Food Regulatory Profile.

**Handling
Precautions**

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW WEBSITE AT DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

**Usable Life and
Storage**

For further details on the suitability of this product for food contact applications, please refer to the Food Regulatory Profile.

**Packaging
Information**

XIAMETER™ RBB-6671-70 Base is available in 20 kg (44 lb) boxes.

Limitations

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

**Health and
Environmental
Information**

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, dow.com or consult your local Dow representative.

**Disposal
Considerations**

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

**Product
Stewardship**

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

Table 1: Heat and Fluid Resistance of XIAMETER™ RBB-6671-70 Base

Test	Unit	Result
Heat Aged, 72 Hours at 200°C (392°F)		
Hardness Change	points	+3
Tensile Change	%	-8
Elongation Change	%	-33
Heat Aged, 72 Hours at 250°C (482°F)		
Hardness Change	points	+1
Tensile Change	%	-38
Elongation Change	%	-59
IRM 901 Oil, 72 Hours at 150°C (302°F)		
Hardness Change	points	-4
Tensile Change	%	-4
Elongation Change	%	-34
Volume Change	%	+6
IRM 903 Oil, 72 Hours at 150°C (302°F)		
Hardness Change	points	-23
Tensile Change	%	-8
Elongation Change	%	-34
Volume Change	%	+43

Properties obtained using 0.5 part of SILASTIC™ RC-4 50P FD Rubber Additive (2,5-bis(tert-butylperoxy)-2,5-dimethyl hexane, 50% masterbatch) per 100 parts of XIAMETER™ RBB-6671-70 Base: molded 10 minutes at 170°C (338°F) and post-cured 4 hours at 200°C (392°F).

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UV Stabilized PC WONDERLITE® PC-110U

產品敘述: UV Stabilized

物性	ISO 測試方法	測試條件	單位	PC-110U
熔融指數	1133	300°C × 1.2KG	ml/10 min	10
比重	1183	23 °C	g/cm ³	1.2
拉伸強度	527	50 mm/min, yield	MPa	65
		50 mm/min, break	MPa	75
延伸率	527	50 mm/min	%	120
彎曲強度	178	2 mm/min	MPa	90
彎曲彈性模數		2 mm/min	GPa	2.4
IZOD 衝擊強度	180/1A	23°C, Notched, 1/8"	KJ/m ²	75
		-30°C, Notched, 1/8"	KJ/m ²	-
Charpy 衝擊強度	179	23 °C Notched	KJ/m ²	75
		-30 °C Notched	KJ/m ²	-
維氏軟化溫度	306	1 Kg, 50 °C/hr	°C	148
		5 Kg, 50 °C/hr	°C	143
熱變形溫度	75/A	1.8 MPa Unannealed	°C	127
		1.8 MPa Annealed	°C	142
線膨脹係數	11359	-	-	6.0~8.0x10-5
燃燒等級	-	UL-94	-	1.5mm V-2
成型收縮率	294-4	-	%	0.5~0.7
標記	1043	-	-	>PC<

August 10, 2020

Notes : These are typical properties only and are not to be construed as specifications. Users should confirm results by their own tests.

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Vydyne 21SPC is a general-purpose, unfilled, lubricated, PA66 resin. Designed principally for injection-molding fabrication, this product offers a combination of engineering properties characterized by high strength; rigidity; good toughness; high melt point; good surface lubricity; abrasion resistance; and resistance to many chemicals, machine and motor oils, solvents and gasoline.

21SPC permits production of molded parts with good initial color plus good property and color retention when using regrind.

21SPC is intended for use in high-productivity applications. In many applications, the molding cycle can be reduced because parts may be removed from the cavity at higher temperatures. In difficult molds where parts have a tendency to stick in the cavity, 21SPC can reduce or eliminate the need for mold release sprays. Critical molded-part dimensions should be checked against specifications before implementing shorter molding cycles on a routine production basis.

General

Regional Availability	• North America	• Europe	• Asia Pacific
Additive	• Lubricant		
Features	• Abrasion Resistance • Gasoline Resistant • Good Toughness • Lubricated	• Chemical Resistant • General Purpose • High Rigidity • Oil Resistant	• Fast Molding Cycle • Good Mold Release • High Strength • Solvent Resistant
Agency Rating	• ASTM, D4066 PA0111 • EU, 10/2011 • FED, L-P-410A • RoHS Compliant	• ASTM, D6779 PA0111 • EU, 2023/2006 • MIL, M-20693B • SAE, J1639 PA0121 Z6	• EC, 1935/2004 • FDA, 21 CFR 177.1500 • NSF, STD-51
Automotive Specifications	• GM QK 002921	• Toyota TSM5516G Class 2 (compliance)	
UL File Number	• E70062		
Appearance	• Natural Color		
Forms	• Pellets		
Processing Method	• Injection Molding		

Physical	dry	cond.	Unit	Test Standard
Density	1.14	-	g/cm ³	ISO 1183
Molding Shrinkage				ISO 294-4
Across Flow : 23°C, 2.00 mm	1.7	*	%	
Flow : 23°C, 2.00 mm	1.8	*	%	
Water Absorption				ISO 62
23°C, 24 hr	1.2	*	%	
Equilibrium, 23°C, 50% RH	2.4	*	%	

Outdoor Suitability	f2	-	UL 746C	
Mechanical	dry	cond.	Unit	Test Standard
Tensile Modulus (23°C)	2800	1800	MPa	ISO 527-2
Tensile Stress (Yield, 23°C)	86	56	MPa	ISO 527-2
Tensile Stress (Break, 23°C)	56	46	MPa	ISO 527-2
Tensile Strain (Yield, 23°C)	4.8	22	%	ISO 527-2
Tensile Strain (Break, 23°C)	23	87	%	ISO 527-2
Flexural Modulus (23°C)	2900	1500	MPa	ISO 178
Flexural Strength (23°C)	80	50	MPa	ISO 178
Poisson's Ratio (23°C)	0.4		-	ISO 527-2
Impact	dry	cond.	Unit	Test Standard
Charpy Notched Impact Strength				ISO 179/1eA
+23°C	6	20	kJ/m²	
-30°C	5	7	kJ/m²	
Charpy Unnotched Impact Strength				ISO 179/1eU
+23°C	N	N	kJ/m²	
-30°C	N	N	kJ/m²	
Notched Izod Impact Strength				ISO 180/1A
+23°C	6	20	kJ/m²	
-30°C	5	7	kJ/m²	
Thermal	dry	cond.	Unit	Test Standard
Heat Deflection Temperature				ISO 75-2/A
1.80 MPa, Unannealed	70	-	°C	
0.45 MPa, Unannealed	200	-	°C	
Melting Temperature	260	*	°C	ISO 11357-3
CLTE				ISO 11359-2
Flow : 23 to 55°C, 2.00 mm	100	*	E-6/K	
Transverse : 23 to 55°C, 2.00 mm	100	*	E-6/K	
RTI Elec				UL 746
0.400 mm	130		°C	
0.710 mm	130		°C	
1.50 mm	130		°C	
3.00 mm	130		°C	
RTI Imp				UL 746
0.400 mm	75		°C	

0.710 mm	75	°C	
1.50mm	75	°C	
3.00 mm	75	°C	
RTI Str			UL 746
0.400 mm	75	°C	
0.710 mm	85	°C	
1.50 mm	85	°C	
3.00 mm	85	°C	

Electrical	dry	cond.	Unit	Test Standard
Volume Resistivity (1.00 mm)	1E11	-	Ohm*m	IEC 60093
Dielectric Strength (1.00 mm)	26	-	kV/mm	IEC 60243
Arc Resistance (3.00 mm)	5		-	ASTM D 495
High Amp Arc Ignition (HAI)				UL 746
0.400 mm	PLC 1		-	
0.710 mm	PLC 0		-	
1.50 mm	PLC 0		-	
3.00 mm	PLC 0		-	
High Voltage Arc Tracking Rate (HVTR), 3.00 mm	PLC 0		-	UL 746
Hot-wire Ignition (HWI)				UL 746
0.400 mm	PLC 4		-	
0.710 mm	PLC 4		-	
1.50 mm	PLC 3		-	
3.00 mm	PLC 2		-	

Flammability	dry	cond.	Unit	Test Standard
Flammability				UL 94
0.400 mm	V-2		-	
0.710 mm	V-2		-	
1.50 mm	V-2		-	
3.00 mm	V-2		-	
Glow Wire Flammability Index				IEC 60695-2-12
0.400 mm	960		°C	
0.710 mm	960		°C	
1.50 mm	960		°C	
3.00 mm	960		°C	
Glow Wire Ignition Temperature				IEC 60695-2-13
0.400 mm	825		°C	
0.710 mm	850		°C	
1.50 mm	850		°C	

3.00 mm	850		°C	
Oxygen index	25	*	%	EN ISO 4589-2

Railway Application	dry	cond.	Unit	Test Standard
Oxygen index	25	-	%	EN ISO 4589-2

Injection	Value	Unit
Drying Temperature	70	°C
Drying Time	1 - 3	h
Rear Temperature	260 - 280	°C
Middle Temperature	270 - 285	°C
Front Temperature	280 - 290	°C
Nozzle temperature	280 - 300	°C
Processing (Melt) Temperature	285 - 300	°C
Mold Temperature	65 - 95	°C



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Zytel® 70G13L NC010

NYLON RESIN

Common features of Zytel® nylon resin include mechanical and physical properties such as high mechanical strength, excellent balance of stiffness and toughness, good high temperature performance, good electrical and flammability properties, good abrasion and chemical resistance. In addition, Zytel® nylon resins are available in different modified and reinforced grades to create a wide range of products with tailored properties for specific processes and end-uses. Zytel® nylon resin, including most flame retardant grades, offer the ability to be coloured.

The good melt stability of Zytel® nylon resin normally enables the recycling of properly handled production waste. If recycling is not possible, we recommend, as the preferred option, incineration with energy recovery (-31kJ/g of base polymer) in appropriately equipped installations. For disposal, local regulations have to be observed.

Zytel® nylon resin typically is used in demanding applications in the automotive, furniture, domestic appliances, sporting goods and construction industry.

Zytel® 70G13L is a 13% glass fibre reinforced polyamide 66 resin for injection moulding.

Product information

Resin Identification	PA66-GF13	ISO 1043
Part Marking Code	>PA66-GF13<	ISO 11469
ISO designation	ISO 16396-PA66,GF13,M1GNR,S14-050	

Rheological properties

	dry/cond.		
Moulding shrinkage, parallel	0.7/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.2/-	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile Modulus	5500/3500	MPa	ISO 527-1/-2
Stress at break	120/75	MPa	ISO 527-1/-2
Strain at break	3/13	%	ISO 527-1/-2
Flexural Modulus	4800/2900	MPa	ISO 178
Flexural Stress at 3.5%	165/90	MPa	ISO 178
Tensile creep modulus, 1h	*/3300	MPa	ISO 899-1
Tensile creep modulus, 1000h	*/2200	MPa	ISO 899-1
Charpy impact strength, 23°C	40/70	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	40/30	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	5/6	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	4.5/4	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -40°C	4.5/4	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	4.5/4	kJ/m²	ISO 180/1A
Izod notched impact strength, -30°C	4.5/3	kJ/m²	ISO 180/1A
Izod notched impact strength, -40°C	4.5/3	kJ/m²	ISO 180/1A
Izod impact strength, 23°C	40/55	kJ/m²	ISO 180/1U

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Izod impact strength, -30°C	35/28	kJ/m²	ISO 180/1U
Poisson's ratio	0.35/0.37		
Abrasion resistance	10/*	mm³	ISO 4649

Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	262/*	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	80/20	°C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	235/*	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	255/*	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h, 50N	205/*	°C	ISO 306
Ball pressure test	220/-	°C	IEC 60695-10-2
Coeff. of linear therm. expansion, parallel, -40-23°C	42/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel	40/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel, 55-160°C	26/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23°C	77/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	93/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, 55-160°C	149/*	E-6/K	ISO 11359-1/-2
RTI, electrical, 0.75mm	125	°C	UL 746B
RTI, electrical, 1.5mm	125	°C	UL 746B
RTI, electrical, 3mm	125	°C	UL 746B
RTI, impact, 0.75mm	120	°C	UL 746B
RTI, impact, 1.5mm	120	°C	UL 746B
RTI, impact, 3mm	120	°C	UL 746B
RTI, strength, 0.75mm	125	°C	UL 746B
RTI, strength, 1.5mm	125/*	°C	UL 746B
RTI, strength, 3mm	125	°C	UL 746B

Flammability

	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	HB/*	class	IEC 60695-11-10
Thickness tested	1.5/*	mm	IEC 60695-11-10
UL recognition	yes/*		UL 94
Burning Behav. at thickness h	HB/*	class	IEC 60695-11-10
Thickness tested	0.71/*	mm	IEC 60695-11-10
UL recognition	yes/*		UL 94
Oxygen index	24/*	%	ISO 4589-1/-2
Glow Wire Flammability Index, 0.75mm	650/-	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm	650/-	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3mm	800/-	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	675/-	°C	IEC 60695-2-13
FMVSS Class	B		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	27	mm/min	ISO 3795 (FMVSS 302)

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Electrical properties

	dry/cond.		
Relative permittivity, 100Hz	3.9/-		IEC 62631-2-1
Relative permittivity, 1MHz	3.2/-		IEC 62631-2-1
Dissipation factor, 100Hz	130/-	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	150/-	E-4	IEC 62631-2-1
Volume resistivity	>1E13/-	Ohm.m	IEC 62631-3-1
Surface resistivity	* /1E15	Ohm	IEC 62631-3-2
Electric strength	25/-	kV/mm	IEC 60243-1
Electric Strength, Short Time, 2mm	25/-	kV/mm	IEC 60243-1

Other properties

	dry/cond.		
Humidity absorption, 2mm	2.2/*	%	Sim. to ISO 62
Water absorption, 2mm	7.6/*	%	Sim. to ISO 62
Water absorption, Immersion 24h	1.7 ^[1] /*	%	Sim. to ISO 62
Density	1230/-	kg/m ³	ISO 1183
[1]: 3.2mm wall thickness			

VDA Properties

Emission of organic compounds	6 µgC/g	VDA 277
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Injection

Drying Recommended	yes
Drying Temperature	80 °C
Drying Time, Dehumidified Dryer	2 - 4 h
Processing Moisture Content	≤0.2 %
Melt Temperature Optimum	295 °C
Min. melt temperature	285 °C
Max. melt temperature	305 °C
Max. screw tangential speed	0.2 m/s
Mold Temperature Optimum	100 °C
Min. mould temperature	70 °C
Max. mould temperature	120 °C
Hold pressure range	50 - 100 MPa
Hold pressure time	3 s/mm
Ejection temperature	210 °C

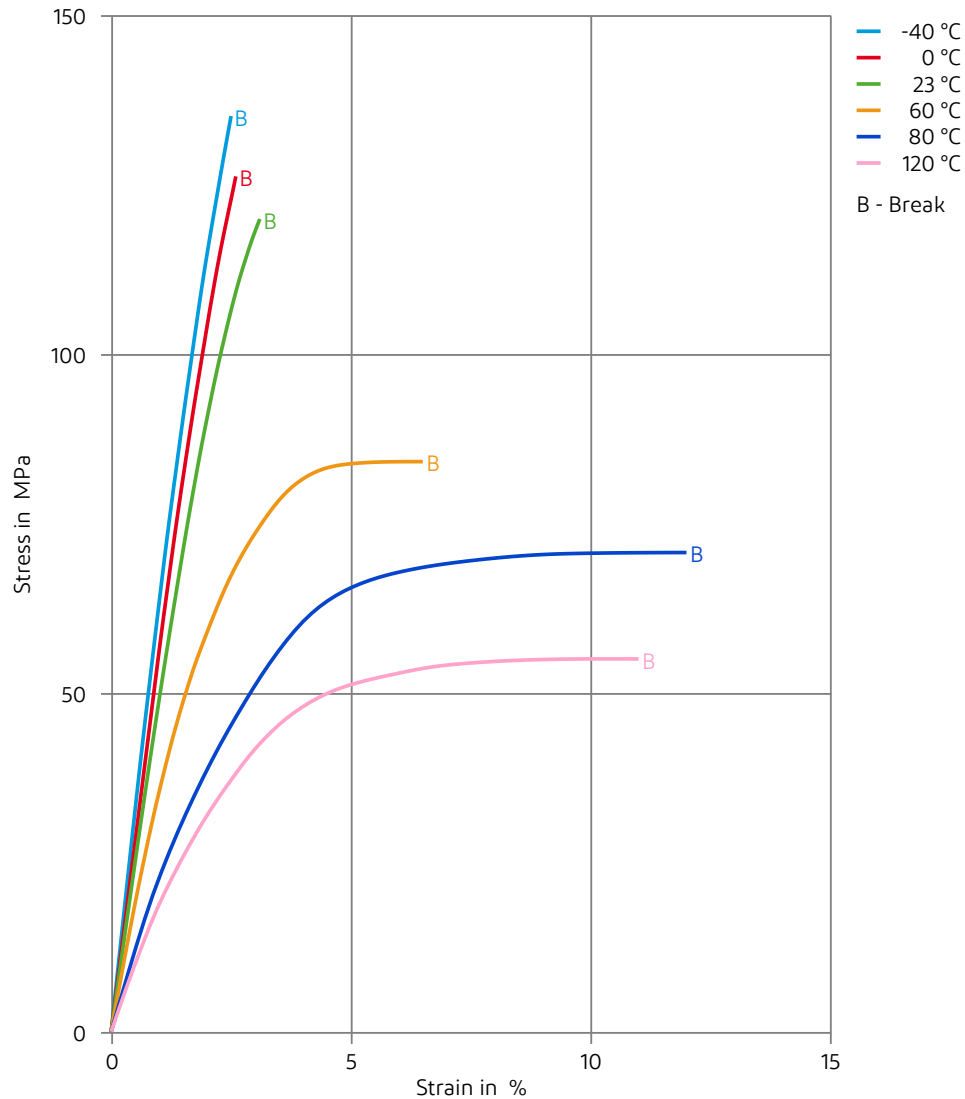
Characteristics

Additives	Release agent
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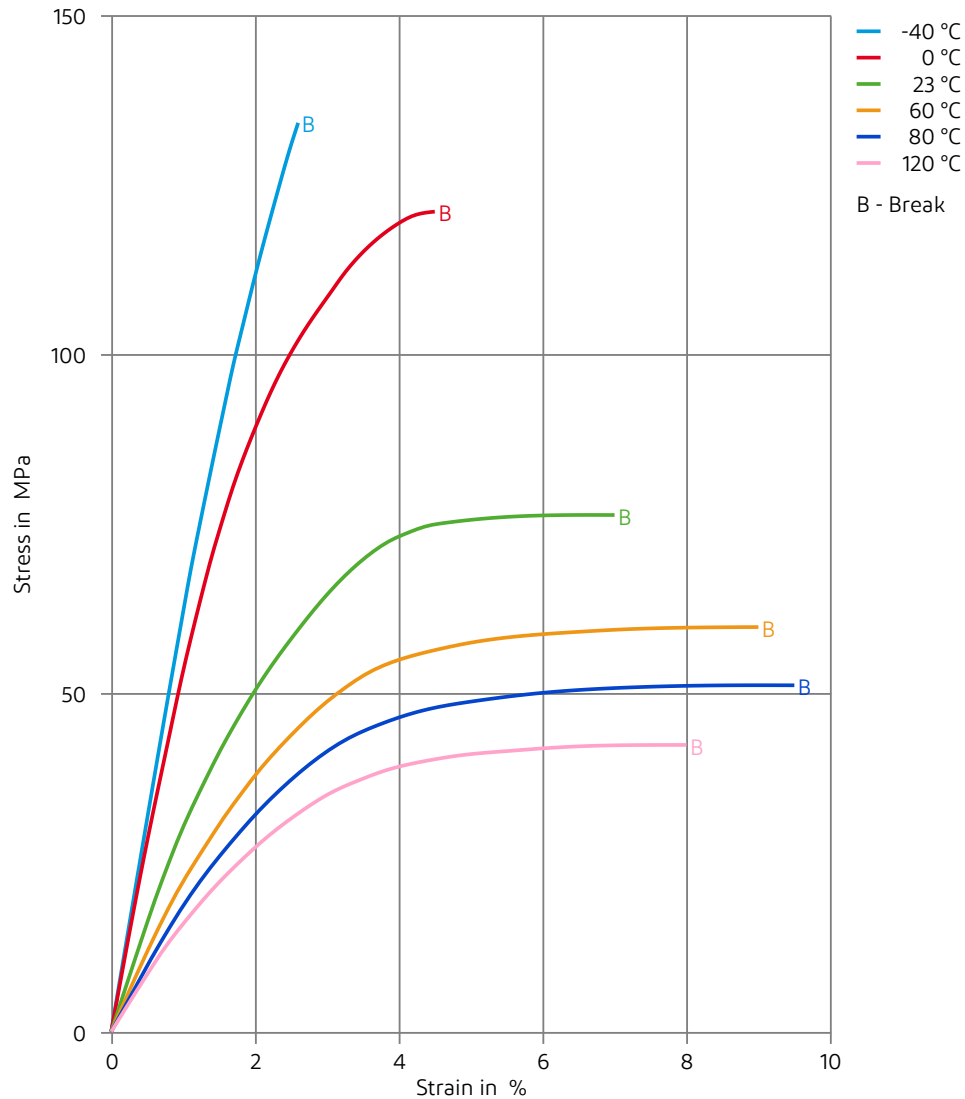
Stress-strain (dry)



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NYLON RESIN

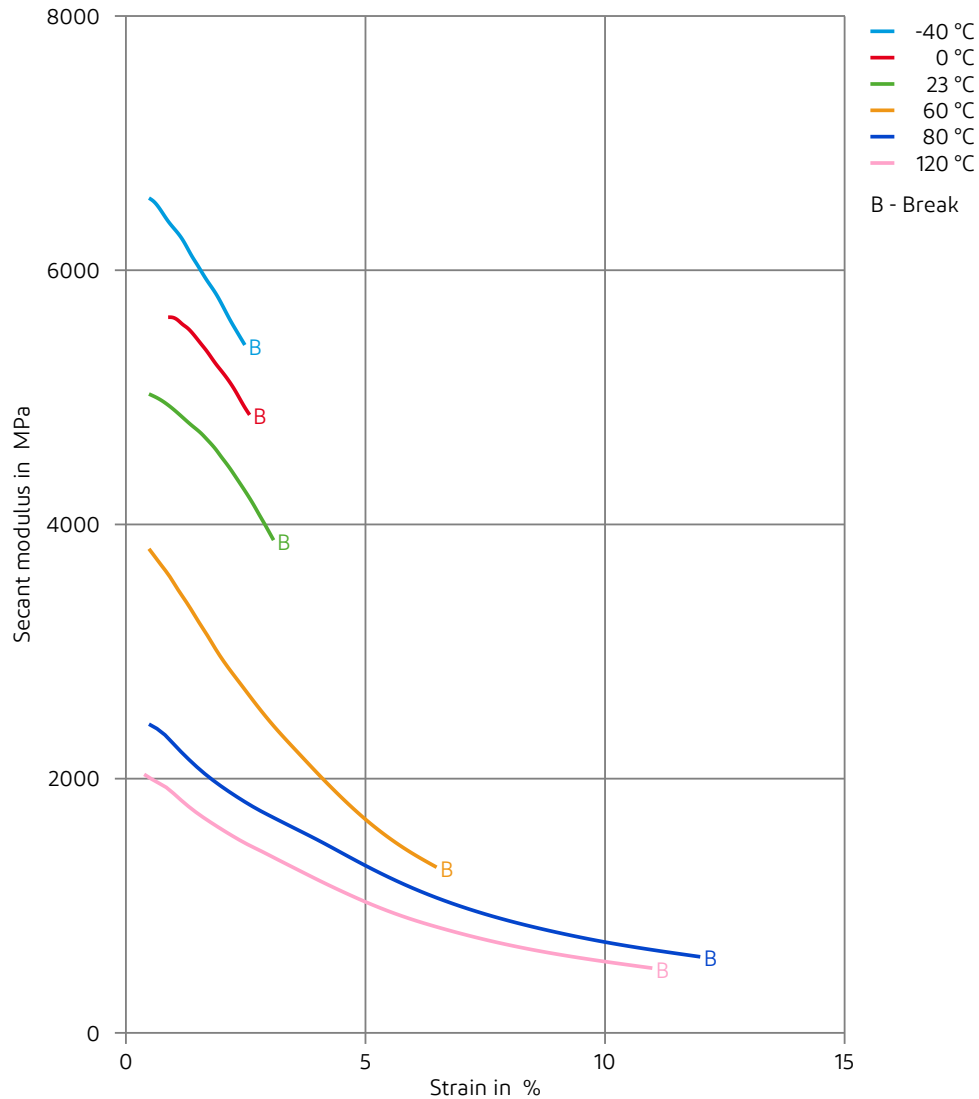
Stress-strain (cond.)



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NYLON RESIN

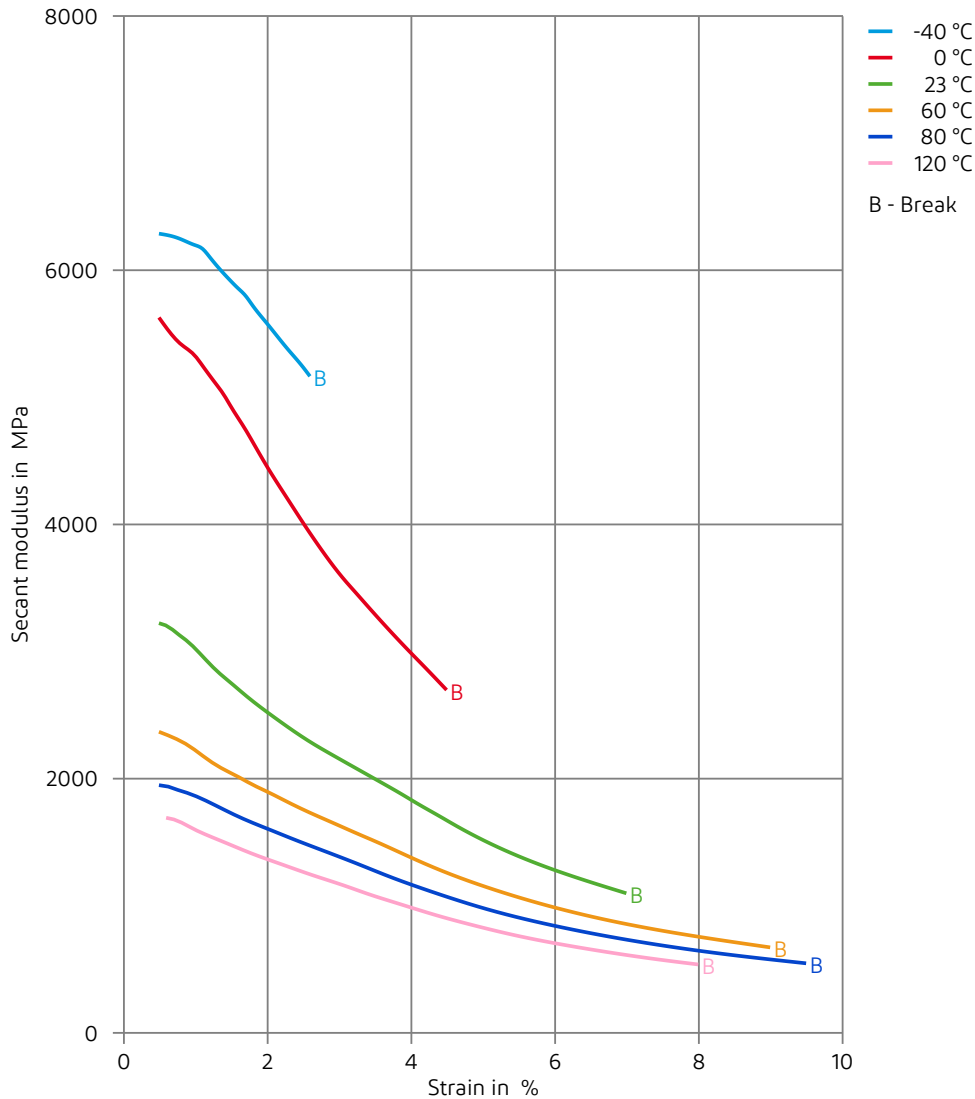
Secant modulus-strain (dry)



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NYLON RESIN

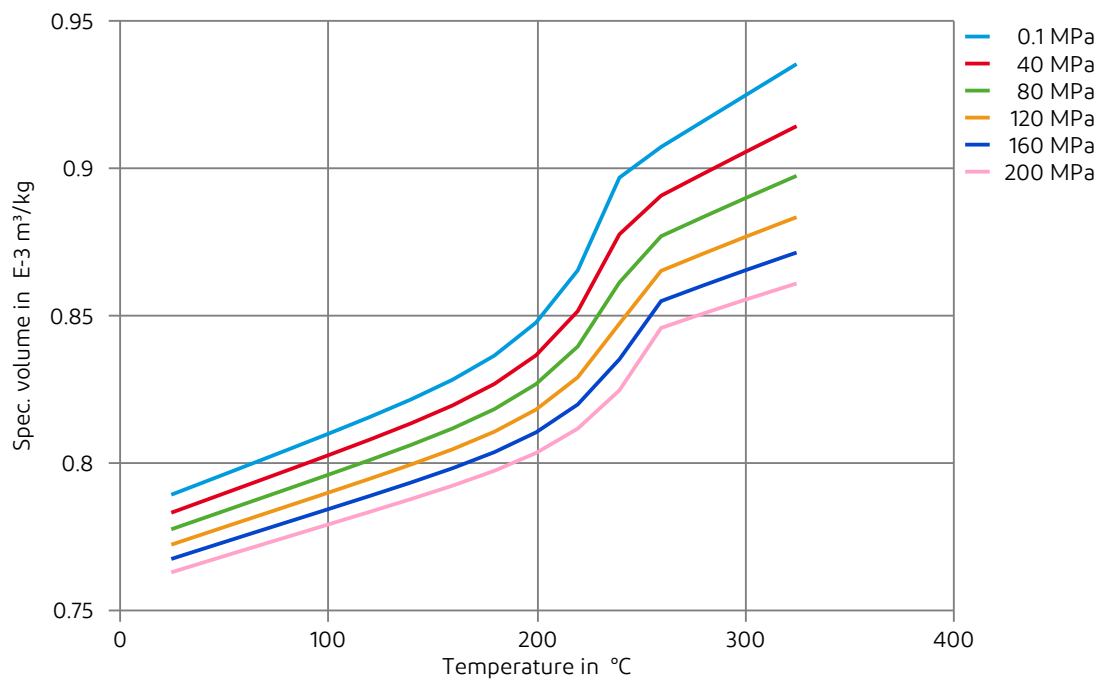
Secant modulus-strain (cond.)



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Specific volume-temperature (pvT)



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Chemical Media Resistance

Acids

- ✓ Acetic Acid (5% by mass), 23°C
- ✓ Citric Acid solution (10% by mass), 23°C
- ✓ Lactic Acid (10% by mass), 23°C
- ✗ Hydrochloric Acid (36% by mass), 23°C
- ✗ Nitric Acid (40% by mass), 23°C
- ✗ Sulfuric Acid (38% by mass), 23°C
- ✗ Sulfuric Acid (5% by mass), 23°C
- ✗ Chromic Acid solution (40% by mass), 23°C

Bases

- ✗ Sodium Hydroxide solution (35% by mass), 23°C
- ✓ Sodium Hydroxide solution (1% by mass), 23°C
- ✓ Ammonium Hydroxide solution (10% by mass), 23°C

Alcohols

- ✓ Isopropyl alcohol, 23°C
- ✓ Methanol, 23°C
- ✓ Ethanol, 23°C

Hydrocarbons

- ✓ n-Hexane, 23°C
- ✓ Toluene, 23°C
- ✓ iso-Octane, 23°C

Ketones

- ✓ Acetone, 23°C

Ethers

- ✓ Diethyl ether, 23°C

Mineral oils

- ✓ SAE 10W40 multigrade motor oil, 23°C
- ✓ SAE 10W40 multigrade motor oil, 130°C
- ✓ SAE 80/90 hypoid-gear oil, 130°C
- ✓ Insulating Oil, 23°C

Standard Fuels

- ✓ ISO 1817 Liquid 1 - E5, 60°C
- ✓ ISO 1817 Liquid 2 - M15E4, 60°C
- ✓ ISO 1817 Liquid 3 - M3E7, 60°C
- ✓ ISO 1817 Liquid 4 - M15, 60°C
- ✓ Standard fuel without alcohol (pref. ISO 1817 Liquid C), 23°C
- ✓ Standard fuel with alcohol (pref. ISO 1817 Liquid 4), 23°C
- ✓ Diesel fuel (pref. ISO 1817 Liquid F), 23°C
- ✓ Diesel fuel (pref. ISO 1817 Liquid F), 90°C
- ✓ Diesel fuel (pref. ISO 1817 Liquid F), >90°C

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Salt solutions

- ✓ Sodium Chloride solution (10% by mass), 23°C
- ✗ Sodium Hypochlorite solution (10% by mass), 23°C
- ✓ Sodium Carbonate solution (20% by mass), 23°C
- ✓ Sodium Carbonate solution (2% by mass), 23°C
- ✗ Zinc Chloride solution (50% by mass), 23°C

Other

- ✓ Ethyl Acetate, 23°C
- ✗ Hydrogen peroxide, 23°C
- ✓ DOT No. 4 Brake fluid, 130°C
- ✓ Ethylene Glycol (50% by mass) in water, 108°C
- ✓ 1% nonylphenoxy-polyethyleneoxy ethanol in water, 23°C
- ✓ 50% Oleic acid + 50% Olive Oil, 23°C
- ✓ Water, 23°C
- ✓ Water, 90°C
- ✗ Phenol solution (5% by mass), 23°C

Symbols used:

- ✓ possibly resistant
Defined as: Supplier has sufficient indication that contact with chemical can be potentially accepted under the intended use conditions and expected service life. Criteria for assessment have to be indicated (e.g. surface aspect, volume change, property change).
- ✗ not recommended - see explanation
Defined as: Not recommended for general use. However, short-term exposure under certain restricted conditions could be acceptable (e.g. fast cleaning with thorough rinsing, spills, wiping, vapor exposure).

Mobility & Materials

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檢驗報告表

2022年12月30日

廠商名稱		立字盛工業股份有限公司	
試材名稱		FREE CUTTING BRASS ROD	
合金編號		JIS H3250 C3604 BD (ROHS)	
項目	數據	標準值	實測值
化	Cu	57.0 - 61.0	58.11
學	Pb	1.8 - 3.7	3.52
成	Fe	< 0.5	0.37
份	Sn+Fe	< 1.0	0.81
%	Zn	REMAINDER	REMAINDER
ROHS	Cd	<75ppm	70ppm
備註			

材質證明書 CERTIFICATE OF COMPLIANCE

廠商名稱:宏庫貿易有限公司

物品名稱:鐵氟龍(PTFE)

規格尺寸:PTFE ROD

以此聲明，茲證明本批材料符合“鐵氟龍(PTFE)”同等性質之性能，特以本書面證明之。

下列材質特性僅供參考:



商 品 名			鐵氟龍
學 名			4 F
性質	單位	ASTM 試驗法	鐵氟龍
比重	gr/cm ³	D-792	2.10-2.30
抗拉強度	kg/cm ²	D-638	280-352
伸長率	%	D-638	200-400
抗拉彈性係數	kg/cm ²	D-638	0.41×10 ⁴
彎曲強度	kg/cm ²	D-790	—
彎曲彈性係數	kg/cm ²	D-790	—
壓縮強度	kg/cm ²	D-695	120
壓縮彈性係數	kg/cm ²	D-695	0.50×10 ⁴
硬度	ROCK well	D-785	塑氧 D55-55
衝擊強度 (有 V 缺口)	kg/cm	D-265	16.4
摩擦係數 1kgcs-17	mg/1000 回	D-1044	—
融點	°C		317-327
熱變形溫度 4.6kg/cm ²	°C	D-648	260
絕緣破壞強度	kv/mm		45
熱傳導率 C/cm	10 ⁻⁴ cal /sec/cm ²	C-117	5.9
熱膨脹係數	10 ⁻⁵ cm/cm°C	D-696	9.9
誘電率 10 ⁶ HZ		D-150	<2.1

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