



**CiaoPlas**

工程塑膠  
 Engineering Plastic

**CIAO GREEN**

生質材料  
 Biodegradable Polymer

**CIAO COLOR**

專業配色服務  
 Professional Color Matching Service



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## 產品 Products

### 高性能尼龍複合材料 (High Performance Nylon)

**耐高温玻纖強化級**  
High-Temperature Resistant and  
Glass Fiber Reinforced Grade

**玻纖強化耐摩擦級**  
Glass Fiber Reinforced and  
Wear Resistance Grade

**碳纖強化耐衝擊級**  
Carbon Fiber Reinforced and  
Elastomer Toughened Grade

### 尼龍6 (PA6)

**高流動快速成型尼龍**  
Easy Flowing Fast Cycle Time Grade

**玻纖強化級**  
Glass Fiber Reinforced Grade

**玻礦纖強化級**  
Glass Fiber and  
Minerals Reinforced Grade

**超韌耐寒級**  
High Impact Strength at  
Low Temperature Grade

**耐衝擊性強化級**  
Glass Fiber Reinforced and  
Elastomer Toughened Grade

**無鹵阻燃級**  
Halogen Free Flame Retardant Grade

**有鹵阻燃級**  
Halogen Flame Retardant Grade

**導熱級**  
Thermally Conductive Grade

**導電級 / 抗靜電**  
Electrically Conductive / Anti-static Grade

**電鍍級**  
Electroplated Grade

**磁性級**  
Magnetic Grade

### 尼龍6/66 (PA6/66)

**玻纖強化級**  
Glass Fiber Reinforced Grade

**超韌耐寒級**  
High Impact Strength at  
Low Temperature Grade

**耐衝擊性強化級**  
Glass Fiber Reinforced and  
Elastomer Toughened Grade

**阻燃級**  
Flame Retardant Grade

**阻燃剛性強化級**  
Flame Retardant and Glass Fiber  
Reinforced Grade

**耐水解級**  
Hydrolysis Resistance Grade

### 尼龍66 (PA66)

**射出級**  
Injection Grade

**玻纖強化級**  
Glass Fiber Reinforced Grade

**超韌耐寒級**  
High Impact Strength at  
Low Temperature Grade

**耐衝擊性強化級**  
Glass Fiber Reinforced and  
Elastomer Toughened Grade

**耐磨級**  
Wear Resistance Grade

**有鹵阻燃級**  
Halogen Flame Retardant Grade

**無鹵阻燃級**  
Halogen Free Flame Retardant Grade

**耐水解級**  
Hydrolysis Resistance Grade

**磁性級**  
Magnetic Grade

### 聚丙烯(PP)

**表面改良級**  
Minerals filled Grade

**保桿級用料**  
Bumper Grade

**抗菌級**  
Anti-bacterial Grade

**植纖級**  
Plant Fibers Grade

**阻燃級**  
Flame Retardant Grade

**無鹵阻燃級**  
Halogen Free Flame Retardant Grade

**無鹵阻燃剛性強化級**  
Halogen Free Flame Retardant and  
Glass Fiber Reinforced Grade

**抗靜電級**  
Anti-static Grade

**導電級**  
Electrically Conductive Grade

**玻纖強化級**  
Glass Fiber Reinforced Grade

**玻礦纖強化級**  
Glass Fiber and Minerals Reinforced Grade

### 生質材料 (BIODEGRADABLE POLYMER)

**射出級**  
Injection Grade

**吹膜級**  
Blown Film Grade

**擠出級**  
Extrusion Grade

## 品質 · 技術 Quality · Technology



BPI



JBPA



Din Certco



seedling mark



GreenPLA



GRS



UL yellow card E135541

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工程塑膠  
Engineering Plastic

CIAO GREEN

生質材料  
Biodegradable Polymer

CIAO COLOR

專業配色服務  
Professional Color Matching Service

全系列產品皆提供抗 UV 級及耐熱級選擇  
UV resistance grades / Heat resistance grades are optional

高性能尼龍

HIGH PERFORMANCE NYLON SERIES

物性表

Technical Data Sheet

級別 Grade	品名/規格 Product Name	比重 Specific Gravity	收縮率 Molding Shrinkage	抗張強度 Tensile Strength at Break	抗折強度 Flexural Strength	抗折模數 Flexural Modulus	衝擊強度 Izod Impact Strength Notched	變熱形溫度 H.D.T	變熱形溫度 H.D.T	UL 94 Class (T=1.5mm, 1/16")	特性 Feature	應用產品 Product Applications
		ASTM D792 (±0.02)	ASTM D955 (%)	ASTM D638 (kg/cm <sup>2</sup> )	ASTM D790 (kg/cm <sup>2</sup> )	ASTM D790 (kg/cm <sup>2</sup> )	ASTM D256 (kg-cm/cm)	ASTM D648 °C(264 psi)	ASTM D648 °C(66 psi)			
耐高溫玻纖強化級 High-Temperature Resistant and Glass Fiber Reinforced Grade	MN212G30 PA46+30% 玻纖 本色	1.4	0.5-0.8	1,800	2,650	110,000	9	285	—	HB	耐高溫、耐摩擦、耐磨耗。 High temperature resistance, friction resistance and wear resistance.	汽車產業： 高效滾珠軸承保持架、增壓空氣管、燃料箱周邊零件、冷卻系統零件、發動機室內零件等。 Automobile industry： High-efficiency ball bearing cage, charged air pipe, fuel tank peripheral parts, cooling system parts, engine room parts, etc. 電子產業： SMT連接器、開關、滑座、襯套、LED、繼電器、PCB連接器、插座、DIP反射杯、散熱模組、耐熱齒輪等。 Electronic industry： SMT connectors, switches, sliding seats, bushings, DIP, relays, PCB connectors, sockets, LED reflector cups, cooling modules, heat-resistant gears, etc. 機械工具及其他領域： 機器人零組件、鍋爐配件、熱水器配件、醫療設備零件、OA機器用軸承、滑動零件等。 Mechanical tools and other fields： Robot components, boiler parts, water heater parts, medical equipment parts, bearings for OA machines, sliding parts, etc.
	MP212G30 PA6T+30% 玻纖 本色	1.41	0.2~0.5	1,850	2,750	108,000	12	300	—	HB	高耐熱性、高強度、高剛性、良好的耐化學性能。 High heat resistance, high strength, high rigidity, good chemical resistance.	
	MP212G40 PA6T+40% 玻纖 本色	1.49	0.1~0.4	2,180	3,100	112,000	13	300	—	HB		
	MP212G50 PA6T+50% 玻纖 本色	1.6	0.1~0.4	2,480	3,600	148,000	16	300	—	HB		
	MQ212G30 PA6T-PA66共聚+30% 玻纖 本色	1.41	0.1~0.3	1,800	2,700	9,2000	9.5	255	—	HB		
	MQ212G40 PA6T-PA66共聚+40% 玻纖 本色	1.47	0.1~0.3	2,050	2,850	108,500	13	255	—	HB		
	MQ212G50 PA6T-PA66共聚+50% 玻纖 本色	1.57	0.05~0.35	2,200	3,350	140,500	14	255	—	HB		
玻纖強化耐摩擦級 Glass Fiber Reinforced and Wear Resistance Grade	ML212G30 PA12+30% 玻纖 本色	1.23	0.3-0.6	1,150	1,450	54,000	9	—	175	HB	高剛性及良好的耐摩擦性。 High rigidity and wear resistance.	高壓電纜的保護層和零部件、電纜套管、接頭、機械凸輪、汽車、滑動機構以及軸承、固定夾、水壺支架、眼鏡角架、鏡框、油杯等。 Protective layer and components of high-voltage cables, cable bushings, joints, mechanical cams, automobiles, sliding mechanisms and bearings, fixing clips, kettle brackets, eyeglass angle frames, mirror frames, oil cups, etc.
	ML212GT30 PA12+30% 玻纖 耐摩擦 本色	1.29	0.2-0.5	1,000	1,500	50,000	13.5	—	172	HB		
碳纖強化耐衝擊級 Carbon Fiber Reinforced and Elastomer Toughened Grade	ML212SC15 PA12碳纖強化 本色	1.06	0.3-0.8	600	850	49,000	7.5	—	145	HB	碳纖維強化、高剛性、耐磨耗。 Carbon fiber reinforced, high rigidity, wear resistance.	汽車制動剎車管、空壓設備軟管、工業用高壓液壓管、管快速接頭、複印機去靜電轉輪、抗靜電容器和IC晶片導軌、運動鞋底等。 Automobile brake pipe, Pneumatic equipment hose, Industrial high-pressure hydraulic pipes, pipe quick connectors, copier anti-static wheels, anti-static capacitors and IC chip guide rails, sports shoe soles, etc.

● 可配合客戶特殊需求提供產品開發服務，品名後若有標示「-XX」之型號即為客制化產品

● We offer customized services for product development, As in the rear of product name marks with "-xx", it stands for customized product.

● 本色樹脂可依客戶顏色需求染色

● Color-matching service for customer's need

● 測試條件：23±2°C, 50±5% RH, 24小時

● Testing condition: 23±2°C, 50±5% RH, 24hrs

● 比重條件:數據正負誤差值±0.02

● The value of specific gravity is subject to the deviation of ±0.02

**尼龍 6 樹脂**

**POLYAMIDE 6 RESIN**

**物性表**

**Technical Data Sheet**

級別 Grade	品名/規格 Product Name	比重 Specific Gravity	收縮率 Molding Shrinkage	抗張強度 Tensile Strength at Break	抗折強度 Flexural Strength	抗折模數 Flexural Modulus	衝擊強度 Izod Impact Strength Notched	變熱形溫度 H.D.T	UL 94 Class (T=1.5mm,1/16")	特性 Feature	應用產品 Product Applications
		ASTM D792 (±0.02)	ASTM D955 (%)	ASTM D638 (kg/cm <sup>2</sup> )	ASTM D790 (kg/cm <sup>2</sup> )	ASTM D790 (kg/cm <sup>2</sup> )	ASTM D256 (kg-cm/cm)	ASTM D648 (°C/264 psi)			
高流動快速成型尼龍 Easy Flowing Fast Cycle Time Grade	MC212FCT35 高流動快速成型 R.V. 2.4 本色	1.12	1	780	1,100	27,000	3	60	V2	結合優異的高流動性及快速結晶，適用於薄件射出。 It exhibits high flow injection and fast cycle properties which is suitable for Thin-Wall injection molding	廣泛應用於電子電機、汽機車、電動工具、配線器材等產業。 Electric appliance, automotive parts, electric tools, cable ties.
	MC212FCT50 高流動快速成型 R.V. 2.7 本色	1.13	0.7	780	1,100	27,000	3	60	—		
	MC212H35 高流動快速成型尼龍 R.V. 2.4 本色	1.12	1	780	1,100	27,000	3	60	V2		
	MC212H50 高流動快速成型尼龍 R.V. 2.7 本色	1.13	0.7	780	1,100	27,000	3	60	—		
玻纖強化級 Glass Fiber Reinforced Grade	MC212G15 NAT 15%玻纖 本色	1.23	0.35	1,150	1,850	50,000	7	200	HB	結合優異的高剛性、尺寸安定性、低翹曲性與表面平滑特性。 It exhibits high rigidity, dimensional stability, low warpage and glossy surface properties.	機車引擎護套、打氣筒、園藝工具、電熱器外殼、風扇外殼、車輪。 Motorcycle engine protection cover, air pump components, garden tools, heater housing, electric fan housing, wheel.
	MC212G20 NAT 20%玻纖 本色	1.27	0.35	1,300	2,100	59,000	9	205	HB		
	MC212G33 NAT 33%玻纖 本色	1.38	0.25	1,650	2,600	85,000	16	210	HB		
	MC212G45 NAT 45%玻纖 本色	1.50	0.1	1,900	3,150	120,000	20	210	HB		
	MC212G50 NAT 50%玻纖 本色	1.57	0.1	2,000	3,200	135,000	22	215	HB		
玻礦纖強化級 Glass Fiber and Minerals Reinforced Grade	MC212GM20 NAT 20%玻礦纖 本色	1.35	0.4	800	1,200	50,000	5	195	HB	結合優異的高剛性、尺寸安定性、低翹曲性與表面平滑特性。 It exhibits high rigidity, dimensional stability, low warpage and glossy surface properties.	機車引擎護套、打氣筒、園藝工具、電熱器外殼、風扇外殼。 Motorcycle engine protection cover, air pump components, garden tools, heater housing, electric fan housing.
	MC212GM30 NAT 30%玻礦纖 本色	1.38	0.35	1,000	1,550	57,000	7	195	HB		
	MC212GM40 NAT 40%玻礦纖 本色	1.44	0.35	1,200	1,900	70,000	9	205	HB		
超韌耐寒級 High Impact Strength at Low Temperature Grade	MC212LST NAT 低溫耐衝擊 本色	1.06	1.45	420	650	16,000	85 (23°C) 9 (-20°C)	55	HB	結合優異的超高韌性及低溫耐衝特性。 It exhibits super tough and high impact strength at low temperatures.	帳篷支架、旅行箱配件、運動器材、嬰兒車及自行車零配件、電動機械零配件。 Tent holder, suitcase accessories, sports equipment, mechanical parts stroller and bicycle accessories.

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● Testing condition: 23±2°C, 50±5% RH, 24hrs

● 比重條件：數據正負誤差值±0.02

● The value of specific gravity is subject to the deviation of ±0.02

尼龍 6 樹脂

POLYAMIDE 6 RESIN

物性表

Technical Data Sheet

級別 Grade	品名/規格 Product Name	比重 Specific Gravity	收縮率 Molding Shrinkage	抗張強度 Tensile Strength at Break	抗折強度 Flexural Strength	抗折模數 Flexural Modulus	衝擊強度 Izod Impact Strength Notched	變熱形溫度 H.D.T	UL 94 Class (T=1.5mm,1/16")	特性 Feature	應用產品 Product Applications
		ASTM D792 (±0.02)	ASTM D955 (%)	ASTM D638 (kg/cm <sup>2</sup> )	ASTM D790 (kg/cm <sup>2</sup> )	ASTM D790 (kg/cm <sup>2</sup> )	ASTM D256 (kg-cm/cm)	ASTM D648 °C(264 psi)			
耐衝剛性強化級 Glass Fiber Reinforced and Elastomer Toughened Grade	MC212STG10 NAT 10%玻纖&耐衝擊 本色	1.18	0.3-0.7	850	1,400	42,000	15	185	HB	結合優異的超高剛性及高韌特性。 It exhibits high rigidity and high toughness properties.  低吸濕級。吸濕率 ≤ 1.5%。 結合優異的超高剛性及高韌特性。 Low moisture absorption moisture absorption ≤ 1.5% It exhibits high rigidity and high toughness properties.	運動器材、電動工具外殼、溜冰鞋底座、輪椅輪框、電池盒座。  Sports equipments, electric equipments casing, roller skate base, wheelchair round frame, battery parts.
	MC212STG20 NAT 20%玻纖&耐衝擊 本色	1.25	0.3	1,100	1,700	50,000	18 (23°C) 10 (-20°C)	200	HB		
	MC212STG35 NAT 35%玻纖&耐衝擊 本色	1.33	0.33	1,400	2,100	75,000	20	205	HB		
	MC212STG30 BK 30%玻纖&耐衝擊 黑色	1.40	0.4	1,650	2,500	95,000	25	200	HB		
	MC212STG40 BK 40%玻纖&耐衝擊 黑色	1.43	0.2-0.4	1,700	1,600	92,000	26 (23°C) 14 (-30°C)	200	HB		
無鹵阻燃級 Halogen Free Flame Retardant Grade	MC212FH05 NAT 無鹵阻燃性 本色	1.17	1.0	700	1,150	30,000	5	75	V0	優異的阻燃特性 It exhibits outstanding flame-retardant	連接器、電器開關殼座、散熱風扇、電動工具、工具機馬達殼  Connector, electric appliance switch, radiation ventilator, electric equipments, machine motor housing.
	MC212FH30 NAT 25%玻纖無鹵阻燃 本色	1.36	0.6-0.8	1,250	2,200	87,000	7~9	205	V0		
	MC212FH35 NAT 30%玻纖無鹵阻燃 本色	1.40	0.5-0.7	1,350	2,300	91,000	9	205	V0		
有鹵阻燃級 Halogen Flame Retardant Grade	MC212LB30 NAT 25%玻纖有鹵阻燃 本色	1.54	0.5-0.7	1,400	2,100	98,000	10	200	V0	高強度、高剛性、高耐熱、良好的尺寸穩定性以及成型工藝性。 High strength, rigidity, heat resistance, excellent dimensional stability and molding technology.	LED燈泡鱗片、3C產品外殼。  LED light bulb plate fin, computer related product casing.
	MC212LB40 NAT 30%玻纖有鹵阻燃 本色	1.60	0.3-0.5	1,500	2,300	100,000	10~12	210	V0		
導熱級 Thermally Conductive Grade	MC212FI10 NAT 高導熱性尼龍 本色	1.3~1.8	0.2-0.4	500	1,100	55,000	3~5	220	V0	導熱率0.5~5。提供絕佳的散熱效果，特別適用於戶外與室內的LED照明燈泡基底殼，且有絕緣導電不同規格特性。  Thermal conductivity 0.5-5。It offers excellent heat dissipation by radiation and is applicable for indoor and outdoor LED lighting.	LED燈泡鱗片、3C產品外殼。  LED light bulb plate fin, computer related product casing.

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尼龍 6 樹脂

POLYAMIDE 6 RESIN

物性表

Technical Data Sheet

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導電級/抗靜電級 Electrically conductive / Anti-static Grade	MC212NC05 NAT 導電/抗靜電性尼龍 本色	1.08	1.8	400	650	16,000	4	200	HB	<p>導電級。表面電阻<math>10^3 \sim 10^5 (\Omega)</math>。 抗靜電級。抗靜電表面電阻<math>10^7 \sim 10^{11} (\Omega)</math> 提供抗靜電與靜電消散(ESD)防護要求， 以及電磁與射頻干擾(EMI/RFI)屏蔽。</p> <p>Electrically conductive surface resistance <math>10^3 \sim 10^5</math>. Anti-static character <math>10^7 \sim 10^{11}</math>. It offers reliability and value on applications that require dissipation of static charges, protection from electrostatic discharge (ESD), and EMI/RFI shielding.</p>	<p>封裝包材、IC及LCD托盤、 電子通訊產品外殼、 電器產品EMI遮罩外殼。</p> <p>Packaging, IC&amp;LCD tray, electronic communication products casing, electric equipments casing with EMI shielding.</p>
電鍍級 Electroplated Grade	MC212MS30 NAT 電鍍性尼龍 本色	1.42	0.9	600	1,000	31,000	3	85	HB	<p>奈米級電鍍尼龍。本色。具高剛性、耐高溫、電鍍後表面平整光滑特性。 HDT較同系列高<math>10^\circ\text{C} \sim 15^\circ\text{C}</math></p> <p>Nano electroplated nylon grade. It exhibits high rigidity, heat resistant, smooth electroplated surface properties which has HDT higher than normal nylon around <math>10 \sim 15^\circ\text{C}</math>.</p>	<p>汽車後照鏡、電鍍產品。</p> <p>Reflector, Electroplated parts.</p>
磁性級 Magnetic Grade	MC212FE20 NAT 磁性尼龍 本色	1.3	0.5	650	950	22,000	6	—	HB	<p>絕緣且具有可吸鐵金屬、不生鏽特性。</p> <p>It exhibits insulation, magnetic properties and rust resistance.</p>	<p>運動器材、玩具、檢測元件、建材。</p> <p>Sporting equipment, Toys, Electric detector parts, Construction parts.</p>

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● Color-matching service for customer's need

● 測試條件： $23 \pm 2^\circ\text{C}$ ， $50 \pm 5\%$  RH，24小時

● Testing condition:  $23 \pm 2^\circ\text{C}$ ， $50 \pm 5\%$  RH，24hrs

● 比重條件：數據正負誤差值 $\pm 0.02$

● The value of specific gravity is subject to the deviation of  $\pm 0.02$

**尼龍 66 樹脂**

**POLYAMIDE 66 RESIN**

**物性表**

**Technical Data Sheet**

級別 Grade	品名/規格 Product Name	比重 Specific Gravity	收縮率 Molding Shrinkage	抗張強度 Tensile Strength at Break	抗折強度 Flexural Strength	抗折模數 Flexural Modulus	衝擊強度 Izod Impact Strength Notched	變熱形溫度 H.D.T	UL 94 Class (T=1.5mm,1/16")	特性 Feature	應用產品 Product Applications
		ASTM D792 (±0.02)	ASTM D955 (%)	ASTM D638 (kg/cm <sup>2</sup> )	ASTM D790 (kg/cm <sup>2</sup> )	ASTM D790 (kg/cm <sup>2</sup> )	ASTM D256 (kg-cm/cm)	ASTM D648 °C(264 psi)			
射出級 Injection Grade	MD212 NAT 射出級 本色	1.14	1.7	835	815	29,500	6.1	70	V2	結合優異的高流動性及快速結晶，適用於薄件射出。 It exhibits high flow injection and fast cycle properties which is suitable for Thin-Wall injection molding.	廣泛應用於電子電機、汽機車、電動工具、配線器材等產業。 Electric appliance, automotive parts, electric tools, cable ties.
玻纖強化級 Glass Fiber Reinforced Grade	MD212G15 NAT 15%玻纖 本色	1.25	0.3	1,150	1,800	54,500	7	240	HB	結合優異的硬度、強度和耐熱特性。 It exhibits outstanding stiffness, strength and heat resistant properties.	運動器材、插頭、風扇葉片、塑膠螺釘、齒輪、自行車煞車碟片、螺帽。 Sporting equipment, Power plug, Fan louver, Plastic screw, Gear parts, Bicycle braking parts, Bolt and nut.
	MD212G33 NAT 33%玻纖 本色	1.38	0.3	1,850	2,850	94,000	12	250	HB		
	MD212G45 NAT 45%玻纖 本色	1.51	0.25	2,200	3,300	130,000	15	255	HB		
	MD212G50 NAT 50%玻纖 本色	1.57	0.25	2,300	3,600	145,000	16	255	HB		
超韌耐寒級 High Impact Strength at Low Temperature Grade	MD212LST NAT 低溫耐衝擊 本色	1.08	1.4	500	750	18,000	90 (23°C) 10 (-20°C)	60	HB	結合優異的超高韌性及低溫耐衝特性。 It exhibits super toughness and high impact strength at low temperatures.	雪鞋鞋底、網球拍條釘。 Snowshoes base.
耐衝剛性強化級 Glass Fiber Reinforced and Elastomer Toughened Grade	MD212STG15 NAT 15%玻纖&耐衝擊 本色	1.19	0.5-1.1	1,100	1,300	40,000	18	210	HB	結合優異的超高剛性及高韌特性。 It exhibits outstanding stiffness, strength and toughness properties.	電動工具外殼、溜冰鞋底、輪椅用料。 Electric tool casing, Roller skates base, Wheelchair wheel frame.
	MD212STG33 NAT 33%玻纖&耐衝擊 本色	1.38	0.3-0.8	1,300	1,800	65,000	24	220	HB		
耐磨級 Wear Resistance Grade	MD212LA10 耐磨性 本色	1.14	2.0	750	1,200	32,000	4	70	HB	結合優異的耐磨及持久特性。 It exhibits outstanding wear resistance and durability properties.	滑輪、軸承套 Pulley, Bearing sleeve.

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● Testing condition: 23±2°C, 50±5% RH, 24hrs

● 比重條件:數據正負誤差值±0.02

● The value of specific gravity is subject to the deviation of ±0.02

**尼龍 66 樹脂**

**POLYAMIDE 66 RESIN**

**物性表**

**Technical Data Sheet**

級別 Grade	品名/規格 Product Name	比重 Specific Gravity	收縮率 Molding Shrinkage	抗張強度 Tensile Strength at Break	抗折強度 Flexural Strength	抗折模數 Flexural Modulus	衝擊強度 Izod Impact Strength Notched	變熱形溫度 H.D.T	UL 94 Class (T=1.5mm,1/16")	特性 Feature	應用產品 Product Applications
		ASTM D792 (±0.02)	ASTM D955 (%)	ASTM D638 (kg/cm <sup>2</sup> )	ASTM D790 (kg/cm <sup>2</sup> )	ASTM D790 (kg/cm <sup>2</sup> )	ASTM D256 (kg-cm/cm)	ASTM D648 °C(264 psi)			
有鹵阻燃級 Halogen Flame Retardant Grade	MD202LB30 NAT 25%玻纖有鹵阻燃 本色	1.45	0.5	1,370	2,200	91,000	8	235	V0	高強度、高剛性、高耐熱、良好的尺寸穩定性以及成型工藝性。 High strength, rigidity, heat resistance, excellent dimensional stability and molding technology.	連接器、電器開關殼座、散熱風扇、電動工具、工具機馬達殼 Connector, Electric appliance switch, Radiator, Electric tools, Machine motor housing.
	MD202LB35 NAT 30%玻纖有鹵阻燃 本色	1.50	0.3	1,400	2,300	85,000	10	240	V0		
無鹵阻燃級 Halogen Free Flame Retardant Grade	MD212FH05 NAT 無鹵阻燃性 本色	1.17	1.1	750	1,200	31,000	5	105	V0	優異的阻燃特性。 It exhibits outstanding flame retardancy properties.	連接器、電器開關殼座、散熱風扇、電動工具、工具機馬達殼。 Connector, Electric appliance switch, Radiator, Electric tools, Machine motor housing.
	MD212FH30 NAT 25%玻纖無鹵阻燃 本色	1.40	0.6	1,300	2,500	70,000	7.5	240	V0		
	MD212FH35 NAT 30%玻纖無鹵阻燃 本色	1.38	0.3	1,200	2,000	83,000	10	240	V0		
耐水解級 Hydrolysis resistance Grade	MD212GH33 耐水解性 本色	1.41	0.27	1,800	2,900	104,000	14	250	HB	具高剛性、耐高溫、耐水解特性材料，且符合規範 TL52062。 It exhibits high rigidity, heat resistant properties which is conform to TL520620.	水室產品、中冷器、汽車配件。 Radiator tank, Cooling fan.
磁性級 Magnetic Grade	MD212SS16 NAT 磁性尼龍 本色	1.21	0.2	700	1,200	27,500	2.5	—	HB	絕緣且具有可吸鐵金屬、不生鏽特性。 符合規範 FDA 21 CFR 177.1500	運動器材、玩具、檢測元件、建材。 Sporting equipment, Toys, Electric detector parts, Construction parts.
	MD212SS33 NAT 磁性尼龍 本色	1.31	0.2	650	1,000	25,000	2	—	HB	It exhibits insulation, magnetic properties and rust resistance. which is conform to FDA 21 CFR 177.1500	

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尼龍 6/66 樹脂

POLYAMIDE 6/66 RESIN

物性表

Technical Data Sheet

級別 Grade	品名/規格 Product Name	比重 Specific Gravity	收縮率 Molding Shrinkage	抗張強度 Tensile Strength at Break	抗折強度 Flexural Strength	抗折模數 Flexural Modulus	衝擊強度 Izod Impact Strength Notched	變熱形溫度 H.D.T	UL 94 Class (T=1.5mm,1/16")	特性 Feature	應用產品 Product Applications
		ASTM D792 (±0.02)	ASTM D955 (%)	ASTM D638 (kg/cm <sup>2</sup> )	ASTM D790 (kg/cm <sup>2</sup> )	ASTM D790 (kg/cm <sup>2</sup> )	ASTM D256 (kg-cm/cm)	ASTM D648 °C(264 psi)			
玻纖強化級 Glass Fiber Reinforced Grade	MB212G15 NAT 15%玻纖 本色	1.22	0.2-0.35	1,000	1,600	48,000	7	220	HB	結合優異的高剛性、尺寸安定性、低翹曲性與表面平滑特性。  It exhibits high flow injection and fast cycle properties which is suitable for Thin-Wall injection molding	吹風機外殼、打字機筒管、照相機腳座、釣具捲線軸。  Hair dryer casing, typewriter bobbin, camera tripod, fishing tackle winder.
	MB212G33 NAT 33%玻纖 本色	1.40	0.15	1,750	2,700	88,000	14	225	HB		
	MB212G45 NAT 45%玻纖 本色	1.51	0.15	1,900	2,900	110,000	20	230	HB		
超韌耐寒級 High Impact Strength at Low Temperature Grade	MB212LST NAT 低溫耐衝擊 本色	1.10	1.6	500	850	19,500	70(25°C) 10(-20°C)	60	HB	結合優異的超高韌性及低溫耐衝特性。  It exhibits super tough and high impact strength at low temperatures.	溜冰鞋支架、嬰兒車配件、運動器材。  Roller skates holder, stroller accessories, sports equipments.
耐衝剛性強化級 Glass Fiber Reinforced and Elastomer Toughened Grade	MB212STG15 NAT 15%玻纖&耐衝擊 本色	1.10	0.5-0.7	950	1,400	40,000	14	>210	HB	結合優異的強度和耐熱特性。  It exhibits outstanding stiffness and heat resistant properties.	馬達外殼、鞋跟、辦公桌椅濾油器、工業用扣帶。  Motor casing, shoe heel, office furniture, oil filter, industrial used buckle.
	MB212STG25 NAT 25%玻纖&耐衝擊 本色	1.32	0.4-0.6	1,250	1,800	55,000	18	>215	HB		
	MB212STG40 NAT 40%玻纖&耐衝擊 本色	1.42-1.46	0.1-0.2	1,400	2,300	70,000	15	215-240	HB		
阻燃級 Flame Retardant Grade	MB212FH05 NAT 無鹵阻燃性 UL94 本色	1.18	1.5-1.6	600	1,050	27,000	6	125	V0	優異的阻燃特性。  It exhibits outstanding flame-retardant properties.	連接器、電器開關殼座、散熱風扇、電動工具、工具機馬達殼。  Connector, electric appliance switch, radiation ventilator, electric equipments, machine motor housing.
阻燃剛性強化級 Flame Retardant and Glass Fiber Reinforced Grade	MB212LB30 NAT 有鹵阻燃剛性 UL94 本色	1.580	0.25	1,400	2,200	91,000	11	240	V0	高強度、高剛性、高耐熱、良好的尺寸穩定性以及成型工藝性。  High strength, rigidity, heat resistance, excellent dimensional stability and molding technology.	連接器、電器開關殼座、散熱風扇、電動工具、工具機馬達殼。  Connector, electric appliance switch, radiation ventilator, electric equipments, machine motor housing.
耐水解級 Hydrolysis resistance Grade	MB212GH33 NAT 耐水解性 本色	1.36-1.39	0.2-0.3	1,600	2,500	80,000	34	205	HB	具高剛性、耐高溫、耐水解特性材料，且符合規範TL52062。  It exhibits high rigidity, heat resistant, properties which is conform to TI520620.	水室產品、中冷器、汽車配件。  Radiator tank, cooling fan

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● Testing condition: 23±2°C, 50±5% RH, 24hrs

● 比重條件：數據正負誤差值±0.02

● The value of specific gravity is subject to the deviation of ±0.02

PP 複合塑膠

物性表

POLYPROPYLENE RESIN

Technical Data Sheet

級別 Grade	品名/規格 Product Name	比重	收縮率	抗張強度	抗折強度	抗折模數	衝擊強度	變熱形溫度	UL 94 Class (T=1.5mm,1/16")	特性 Feature	應用產品 Product Applications
		Specific Gravity ASTM D792 (±0.02)	Molding Shrinkage ASTM D955 (%)	Tensile Strength at Break ASTM D638 (kg/cm <sup>2</sup> )	Flexural Strength ASTM D790 (kg/cm <sup>2</sup> )	Flexural Modulus ASTM D790 (kg/cm <sup>2</sup> )	Izod Impact Strength Notched ASTM D256 (kg-cm/cm)	H.D.T ASTM D648 (°C/264 psi)			
表面改良級 Minerals Filled Grade	PP212MS15 NAT 15% 礦纖 表面改良 本色	1.05	1.55	325	425	14,775	3.5	114	HB	結合優異的高剛性、高韌性、表面平滑性。 It exhibits high rigidity, high toughness, glossy surface properties.	儀表板座、門板、內部飾板、燈罩、家電產品零件。 Motor meter base, door plank, lampshade, home appliance.
	PP212MS25 NAT 25% 礦纖 表面改良 本色	1.14	0.9-1.2	330	485	16,120	4	116	HB		
保桿級用料 Bumper Grade	PP212MS20 BK 20%礦纖 黑色	1.03	0.4	230	365	18,895	5.5	60	HB	結合優異的高剛性、尺寸安定性、高韌性、表面平滑性。 It exhibits high rigidity, dimensional stability, high toughness, glossy surface properties.	儀表板座、門板、內部飾板、燈罩、家電產品零件、飯鍋外殼、咖啡爐、刮鬍刀外殼。 Motor meter base, door plank, lampshade, rice cooker housing, coffee pot, razor casing.
抗菌級 Anti-bacterial Grade	PP212AG05 NAT 抗菌級 本色	0.97	1.4	350	450	11,000	4	115	HB	結合牡蠣殼粉/銀離子抗菌特性、減少樹脂上細菌孳生(大腸桿菌、金黃色葡萄球菌)。通過JISZ 2801測試。 It applies to the products that require hygienic and control of bacteria growth. Combining with Silver ion which has very good antibacterial property and is able to control E.coli, Staphylococcus aureus. JISZ 2801 test approved.	握把、廁所配件、居家用品。 Grip, bathroom accessories home appliance.
植纖級 Plant fibers Grade	PP212PF20 植纖級 本色	0.97	1.4	320	570	17,000	5	100	HB	結合植纖外觀及低比重特性，讓產品具有環保概念。 The modified PP resin with plant fibers has the characteristic of plant fibers appearance and lower gravity which is suitable for eco-friendly products.	廚房用具、裝飾產品。 Kitchenware decorative products.
阻燃級 Flame Retardant Grade	PP212LB05 NAT 阻燃級本色	1.25	1.0	240	520	20,000	3	100	V0	結合優異的耐燃性、尺寸安定性與耐候性。 It exhibits flame retardancy, dimensional stability and weatherability resistance properties.	電熱器、電暖器、電器絕緣板。 Electric heater, electric radiator, electric equipment for insulation plank.
	PP212LB05-1 NAT 阻燃級本色	0.90	1.0	300	550	14,000	3	100	V2		
無鹵阻燃級 Halogen Free Flame Retardant Grade	PP212FH05 NAT 無鹵阻燃級 UL94 本色	1.1	1.5	200	360	12,000	5	100	V0		
無鹵阻燃剛性強化級 Flame Retardant and Glass Fiber Reinforced Grade	PP212FH35 NAT 無鹵阻燃剛性強化級 UL94 本色	1.40	0.89	400	660	52,000	6.5	155	V0		
抗靜電級 Anti-static Grade	PP212AS05 NAT 抗靜電級 本色	0.90	1.5	280	450	12,500	4	115	HB	材料表面電阻達到 $10^7 \sim 10^{11} (\Omega/\square)$ 抗靜電特性。 It applies to the products that require anti-static characteristic with surface resistance $10^7 \sim 10^{11} (\Omega/\square)$	包裝材、無塵室耗材、電子產業。 Packaging material, cleanroom supplies electronic industry.
導電級 Electrically conductive Grade	PP212LC20 BK 導電級 本色	1.10	1.2	300	500	12,500	4	100	HB	材料表面電阻達到 $10^3 \sim 10^5 (\Omega/\square)$ 導電特性。 It applies to the products that require anti-static characteristic with surface resistance $10^3 \sim 10^5 (\Omega/\square)$	家電外殼、風扇配件、無塵室耗材。 Electric appliance housing fan accessories cleanroom supplies.

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PP 複合塑膠

物性表

POLYPROPYLENE RESIN

Technical Data Sheet

級別 Grade	品名/規格 Product Name	比重 Specific Gravity	收縮率 Molding Shrinkage	抗張強度 Tensile Strength at Break	抗折強度 Flexural Strength	抗折模數 Flexural Modulus	衝擊強度 Izod Impact Strength Notched	變熱形溫度 H.D.T	UL 94 Class (T=1.5mm,1/16")	特性 Feature	應用產品 Product Applications
		ASTM D792 (±0.02)	ASTM D955 (%)	ASTM D638 (kg/cm <sup>2</sup> )	ASTM D790 (kg/cm <sup>2</sup> )	ASTM D790 (kg/cm <sup>2</sup> )	ASTM D256 (kg-cm/cm)	ASTM D648 °C(264 psi)			
玻纖強化級 Glass Fiber Reinforced Grade	PP212G20 NAT 20%玻纖 本色	1.07	0.3	700	1,150	41,000	11	155	HB	結合優異的高剛性、尺寸安定性。 It exhibits high rigidity and dimensional stability properties.	化工廠泵浦外殼、紡織紗管、汽車風扇、自行車配件、打氣筒零件。 Pump housing, spin tube, motor fan, bicycle accessories, air pump components.
	PP212G30 NAT 30%玻纖 本色	1.12	0.2	750	1,150	58,000	7	160	HB		
	PP212G40 NAT 40%玻纖 本色	1.22	0.2	880	1,480	70,300	15	155	HB		
玻礦纖強化級 Glass Fiber and Minerals Reinforced Grade	PP212GM20 NAT 20%玻礦纖 本色	1.03	1.0	370	550	20,000	3	130	HB	結合優異的高剛性、尺寸安定性、表面平滑性。 It exhibits high rigidity and dimensional stability properties.	儀錶板座、門板、燈罩、飯鍋外殼、咖啡爐、刮鬍刀外殼。 Motor meter base, door plank, lampshade, rice cooker housing, coffee pot, razor casing.
	PP212GM30 NAT 30%玻礦纖 本色	1.11	0.9	400	600	25,000	4	130	HB		
	PP212GM40 NAT 40%玻礦纖 本色	1.20	0.8	420	650	30,000	4	135	HB		

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生質材料

物性表

BIODEGRADABLE POLYMER

Technical Data Sheet

級別 Grade	品名/規格 Product Name	比重 Specific Gravity	收縮率 Molding Shrinkage	抗張強度 Tensile Strength at Break	抗折強度 Flexural Strength	抗折模數 Flexural Modulus	衝擊強度 Izod Impact Strength Notched	變熱形溫度 H.D.T	特性 Feature	應用產品 Product Applications
		ASTM D792 (±0.02)	ASTM D955 (%)	ASTM D638 (kg/cm <sup>2</sup> )	ASTM D790 (kg/cm <sup>2</sup> )	ASTM D790 (kg/cm <sup>2</sup> )	ASTM D256 (kg-cm/cm)	ASTM D648 °C(264 psi)		
射出級 Injection Grade	PLA290HT07 NAT 超高耐熱(120°C) Heat resistance(120°C)	1.26	1.2	500	900	40,000	3	120	<p>為生物可降解材料，具耐熱、耐刮、流動性佳及結晶速度快...等特性。</p> <p>Biodegradable materials exhibit heat resistance, mar resistance, high flow rate and fast cycle time characteristic.</p>	<p>一般射出級產品、辦公室用品、餐具、高亮面耐熱馬克杯。</p> <p>General injection grade for OA supplies, tableware, heat resistant and glossy mugs.</p>
	PLS410MS03 WHT 耐熱增韌級(90°C) Heat resistance(90°C) Toughness and impact strength properties biomass material	1.29	1.7	400	550	11,800	5.2	90		
	PLS420MS18-3 NAT 耐熱增韌級經濟型(90°C) (Economical) Heat resistance(90°C) Toughness and impact strength properties biomass material	1.39	1.2	350	650	30,000	4.5	95		
	PLS440PF03-1 NAT 增韌級甘蔗植纖 Toughness and impact strength properties Sugarcane biomass material	1.23	1	350	550	11,000	3	65		

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● Testing condition: 23±2°C, 50±5% RH, 24hrs

● 比重條件:數據正負誤差值±0.02

● The value of specific gravity is subject to the deviation of ±0.02

生質材料

物性表

BIODEGRADABLE POLYMER

Technical Data Sheet

級別 Grade	品名/規格 Product Name	比重 Specific Gravity	MD抗張強度 Tensile Strength at Break	MD延伸率 MD Elongation	TD抗張強度 TD Tensile Strength at Break	TD延伸率 TD Elongation	熔融 MI	特性 Feature	應用產品 Product Applications
		ASTM D792 (±0.02)	ASTM D638 (kg/cm <sup>2</sup> )	ASTM D790 (kg/cm <sup>2</sup> )	ASTM D790 (kg/cm <sup>2</sup> )	ASTM D256 (kg-cm/cm)	ASTM D1238 g/10min (190°C)		
吹膜級 Blown Film Grade	PBM210MS15 NAT 一般型 General grade	1.3	350	>100	400	>150	<5	<p>為生物可降解吹膜材料，可運用於膜袋類一次性消耗產品，具有良好的延展性及韌性。</p> <p>It exhibits excellent melt strength and elongation film compounds products which are suitable for disposable plastic bags.</p>	<p>塑膠包材、農地膜。</p> <p>Plastic bags, Agricultural film.</p>
	PBM310MS20 BK 經濟型 Economic grade	1.39	500	>100	400	>200	<5		

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- We offer customized services for product development, As in the rear of product name marks with "-xx", it stands for customized product.

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尼龍與環保複材專家

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BIODEGRADABLE POLYMER

Technical Data Sheet

級別 Grade	品名/規格 Product Name	比重 Specific Gravity	抗張強度 Tensile Strength at Break	抗折強度 Flexural Strength	抗折模數 Flexural Modulus	衝擊強度 Izod Impact Strength Notched	變熱形溫度 H.D.T	特性 Feature	應用產品 Product Applications
		ASTM D792 (±0.02)	ASTM D638 (kg/cm <sup>2</sup> )	ASTM D790 (kg/cm <sup>2</sup> )	ASTM D790 (kg/cm <sup>2</sup> )	ASTM D256 (kg-cm/cm)	ASTM D648 (°C/264 psi)		
擠出級 Extrusion Grade	PLA290-1 NAT 3D列印生質材料 3D printing biodegradable polymer	1.24	500	1000	30,000	3	55	適用於3D線材產品，印製時無臭味且不易捲翹。 3D printing filament grade with no foul smell while printing and smooth surface.	3D列印線材。 3D printing filament.
	PLS410MS18-1 NAT 耐熱板材、餐盒 Heat resistant sheet Heat resistant tableware	1.39	400	650	16,500	6	85	為生物可降解材料，耐熱性佳，防潮、耐熱、無毒、無臭、無味之包裝材料。 Biodegradable extrusion film with superior features of heat resistance, heat resistance, moisture-proof, non-toxic, and odorless.	食品、纖維、一般文具、雜貨等個體包。 Food, fibert, stationery, and general merchandise
	PLS130-1 NAT 吸管生質材料(可彎折) Heat resistance biodegradable polymer for bendable straw	1.25	400	500	11,000	7	70	為生物可降解材料吸管，友善自然環境，安全且無毒。 It's biodegradable material of straw, enviornmental-friendly, safe as well as non-toxic.	生質吸管 Biomass material straw
	PLS420MS18 NAT 耐熱吸管生質材料 Heat resistance biodegradable polymer for bendable straw (Economical)	1.39	400	650	16,500	6	85		

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