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Driving into the future with **Formosa Plastics Group**.

汽車部件

汽車引擎室部件使用材料

For Parts Under the Hood



台塑企業
FORMOSA PLASTICS GROUP



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目錄 INDEX

引擎室下護板 Under Body	III-01
油箱蓋 Fuel Tank Cap	III-09
冷卻風扇葉片 Cooling Fan	III-15
汽車空調系統組件 Under Hood Air Management & HVAC Ducting	III-25
引擎室冷卻液、抗凍劑 Coolant/Antifreeze	III-31
副水箱、煞車油杯、雨刷水箱、汽車水箱支架 Coolant Reservoir/Brake Fluid Container/ Wiper Fluid Container/Radiator Mounting	III-37
電線用波紋管、電線披覆、芯線皮 Wire Harness Covers/Wire Insulation	III-51
啟動電池、電池外殼 Starter Battery/Battery Casing & Housing	III-65



台塑企業**汽車部件** 使用材料

引擎室下護板 Under Body

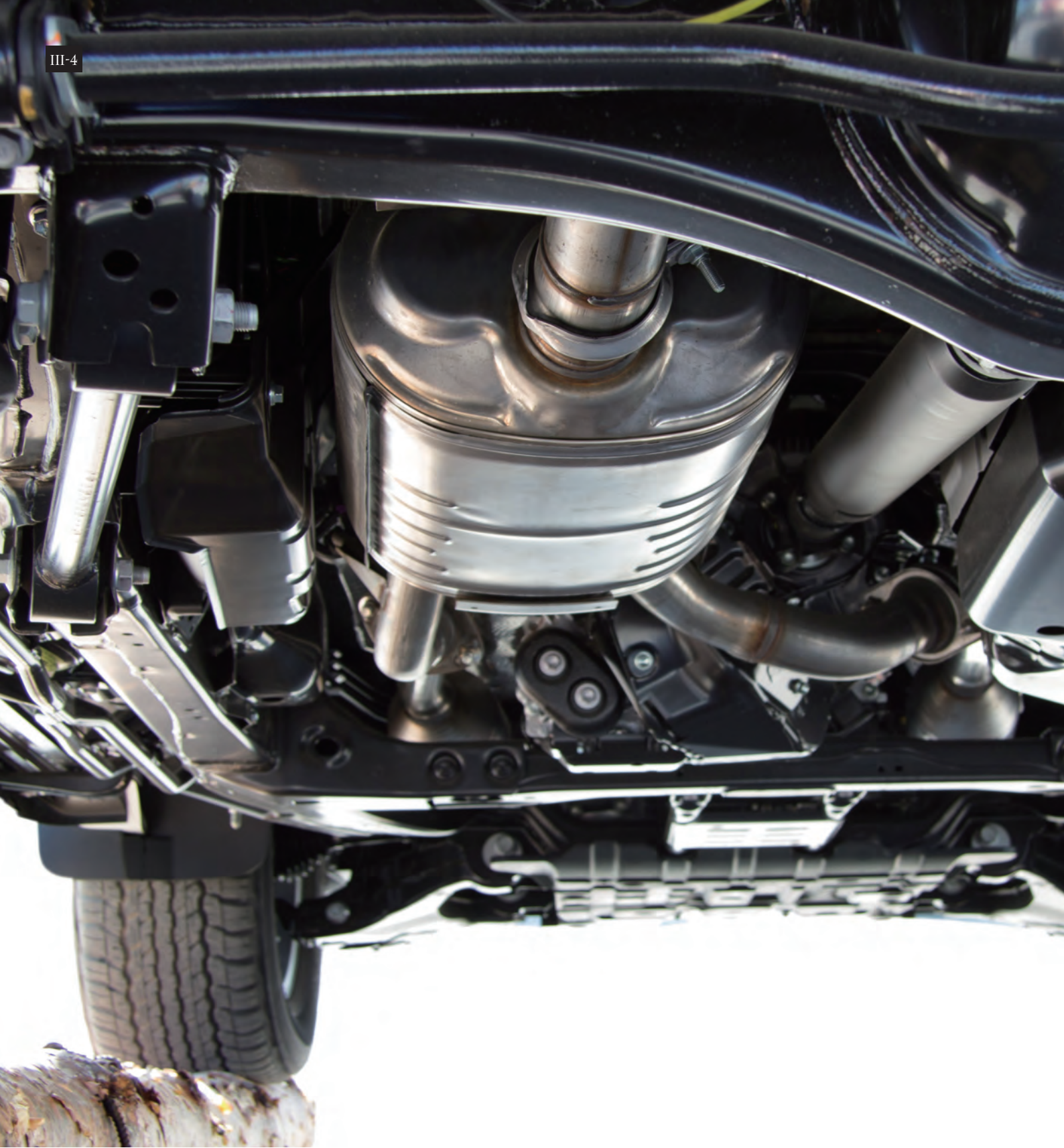




耐衝擊強度，確保行駛間的安全

優異的耐衝擊性及熱穩定性應用於引擎室下護板，讓車輛行駛於各種路面可保護引擎室零件免受異物及積水汙損。





OUTSTANDING IMPACT STRENGTH TO ENSURE SAFE RIDING

The excellent impact resistance and thermal stability properties of the materials used in the under body of the engine compartment will help protect engine compartment parts from being damaged by foreign objects and accumulating water while cruising on various kinds of roads.



引擎室下護板原料



PP 產品 (台塑公司)

產品特性及優點：

台塑 PP 產品用於汽車零件有輕量化、低成本、加工性佳優點，並可依其特性進行改質（如：添加滑石粉、玻纖等），以產製各式化汽車零組件。

4304 屬於高流動高衝擊的熱塑性聚烯烴 (RTPO) 材料，與 20 % 玻纖複合後即可達到該產品物性要求，不須外加大量增韌劑。

加工方式：注塑成型。

產品規格表：

種類		耐衝擊共聚物		
產品型號		4304	對抗品	
項目	單位	平均值		
熔融指數	g/10min	30	32	
降伏強度	kg/cm ²	230	210	
剛性係數	kg/cm ²	9,000	10,000	
Izod 耐衝擊強度	kg.cm/cm	常溫 (23°C)	45	15
		低溫 (-20°C)	10	7
熱變形溫度	°C	100	107	

聯繫方式：台灣塑膠工業股份有限公司 聚丙烯部 營業處

公司電話：886-2-27122211 轉 6169 公司傳真：886-2-27181230

公司地址：10508 台北市松山區敦化北路 201 號前棟八樓

E-mail：eric0602@fpc.com.tw、tbcharles@fpc.com.tw

Raw materials for Under Body



PP Resins (FPC)

Product Features and Benefits:

Using FPC's PP raw materials in auto parts provides lightweight, low cost, and good workability characteristics and can be modified according to their properties (such as adding talc powder, glass fiber, etc.) to produce a variety of auto parts and components.

4304 is a type of thermoplastic polyolefin (RTPO) material with high fluidity and high impact strength. When mixed with 20% fiberglass compound, it can achieve its physical properties without having to add large amounts of toughener.

Processing Methods: Designed for injection molding.

Products Specifications:

Type		Impact Copolymer	
Grade		4304	Competitor
Properties	Unit	Typical Value	
Melt Index	g/10min	30	32
Tensile Strength at Yield	kg/cm ²	230	210
Flexural Modulus	kg/cm ²	9,000	10,000
Izod impact Strength	kg.cm/cm	23°C	15
		-20°C	7
HDT	°C	100	108

Contact Information:

Formosa Plastics Corporation Polypropylene Div. Sales Dept.

TEL: 886-2-27122211 EXT. 6169 FAX: 886-2-27181230

ADD.: 8F., No. 201, Tung Hwa N. Road, Songshan Dist., Taipei City 10508, Taiwan (R.O.C.)

E-mail: eric0602@fpc.com.tw / tbcharles@fpc.com.tw

引擎室下護板原料



Formolene 6600A 同時具有優異的耐衝擊及剛性的特性，並於連續押出及吹塑成型加工上能保有熱穩定性。

Formolene® PP 產品（台塑美國公司）

台塑美國公司提供多種的聚丙烯樹脂產品，適用於車用市場各部件加工應用。

Formolene® PP 設計可達到全球車廠 (OEM) 引擎室各部件嚴苛的規範，同時提供優化的加工及二次組裝製造的特性。Formolene® PP 具有多種的車用級規格樹脂，適用於低熔指押出成型與高熔指射出成型及複合材混煉等加工方式，提供耐衝擊性與剛性平衡的特點，且能使產品輕量化，提升生產效率的優勢以降低加工成本。

產品特性及優點：

Formolene® 6600A

6600A 是一個低熔指數押出吹製級產品，熔融指數 0.5，為高耐衝擊 PP 聚合物，主要用於大型引擎室下空調系統及汽車內裝空調系統。

低的熔融指數，於真空成型及押出成型有良好的加工特性，針對大型零件押出吹製後提供良好的強度，吹製成型加工具有熱穩定性。汽車零件應用於一般小客車、大客車及船舶應用，面對的低溫及高溫環境下能保有高耐衝擊效果。

加工方式：真空吹製及押出吹製成型。

產品規格表：

產品型號			6600A
項目	單位	試驗方法	平均值
熔融指數	g/10min	ASTM D1238	0.5
彎曲模數	MPa @ 1% secant	ASTM D790	1,069
抗張強度	MPa	ASTM D638	25
Izod 衝擊強度	@ RT KJ/m ²	ASTM D256	NB
	@ -30 Dec C KJ/m ²		na
熱變形溫度	Dec C @ 0.45MPa	ASTM D648	86

聯繫方式：Formosa Plastics Corporation, U.S.A.

公司電話：1-888-372-8723 聯絡人：Simon Hwang

公司地址：9 Peach Tree Hill Rd., Livingston, NJ 07039

E-mail：shwang@fpcusa.com

Raw materials for Under Body



Formolene 6600A offers a robust balance of impact and stiffness properties, with thermal stability for multi pass utility in continuous extrusion blow molding and sheet extrusion processes.

Formolene® PP resins (FPC USA)

FPC USA offers a broad range of polypropylene resins for the transportation market. Our Formolene automotive resins are designed to meet the design demands of global automotive OEM specifications, as well as provide for optimized processing and secondary fabrication assembly.

Formolene polypropylene automotive resins are available for low MFR extrusion processes and high MFR injection molding and compounding processes, offering a broad range of impact stiffness balanced properties, in line with cost reduction efforts in terms of part lightweighting and increased production rates.

Product Features and Benefits:

Formolene® 6600A

6600A is fractional MFR profile extrusion and extrusion blow molding grade high impact polypropylene copolymer designed for large under hood HVAC ducting and interior air management systems.

Its low MFR makes it suitable for profile extrusion and thermoforming of automotive parts, in addition to providing excellent melt strength for large part extrusion blow molding, with multiple pass thermal stability. It delivers high impact performance at both elevated and low temperatures as desired by the transportation industry for automotive, recreation vehicles and marine applications.

Processing Methods:

Designed for sheet extrusion thermoforming and extrusion blow molding.

Products Specifications:

Grade			6600A
Properties	Unit	Test Method	Typical Value
MFR	g/10min	ASTM D1238	0.5
Flexural Modulus	MPa @ 1% secant	ASTM D790	1,069
Tensile Strength	MPa	ASTM D638	25
Notched Izod Impact	@ RT KJ/m ²	ASTM D256	NB
	@ -30 Dec C KJ/m ²		na
HDT	Dec C @ 0.45MPa	ASTM D648	86

Contact Information:

Formosa Plastics Corporation, U.S.A.

TEL: 1-888-372-8723 Contact: Simon Hwang
 ADD.: 9 Peach Tree Hill Rd., Livingston, NJ 07039
 E-mail: shwang@fpcusa.com

台塑企業**汽車部件** 使用材料

油箱蓋 Fuel Tank Cap





耐油、耐磨、極佳的尺寸安定性

耐油、耐有機溶劑與極佳的尺寸安定性特性應用於油箱蓋，讓汽油能密封於油箱內避免油氣於車輛行駛間揮發於空氣中。



油箱蓋原料



POM 產品 (台塑公司)

台塑鋼® FORMOCON® 共聚型聚甲醛樹脂

產品特性及優點：

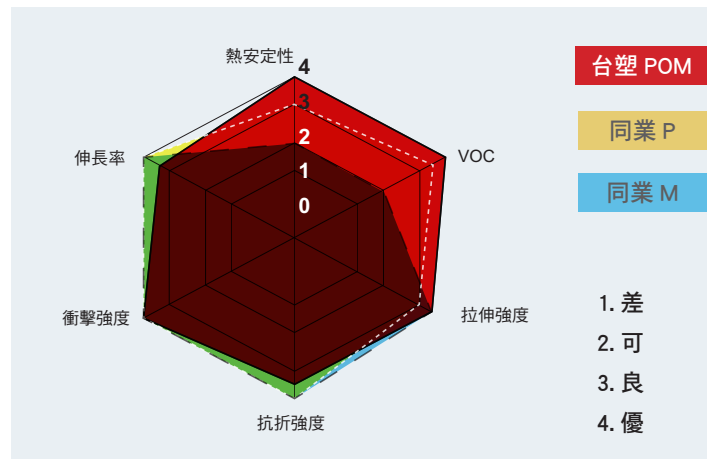
POM 為高結晶性樹脂，有下列特性：

1. 有極佳的剛性、耐蠕變及耐疲勞性；
2. 摩擦係數小，耐磨耗，具自潤性功能；
3. 熱膨脹係數小，有極佳尺寸安定性；
4. 耐油、耐有機溶劑。

主要應用於汽車內需要剛性、潤滑性、耐疲勞性等零件。

加工方式：(1) 射出成型 (2) 押出成型。

台塑 POM 產品與同業廠物性比較：



產品規格表：

產品型號			標準級				
			FM025	R6	FM090	FM130	FM270
特性			高黏度	標準增韌	標準流動	中流動	高流動
加工方式			押出/射出	射出	射出	射出	射出
項目	單位	試驗方法	平均值				
熔融指數	g/10min	ASTM D1238	2.5	6	9	13	27
拉伸強度	kg/cm ²	ASTM D638	610	620	620	620	620
抗折強度	kg/cm ²	ASTM D790	950	950	950	950	950
硬度	M-scale	ASTM D785	78	80	80	80	80
耐衝擊強度	kg.cm/cm 常溫 (23°C)	ASTM D256	7.6	7.0	6.5	6.0	5.4
熱變形溫度	°C @18.6kgf/cm ²	ASTM D648	110	110	110	110	110

聯繫方式：台灣塑膠工業股份有限公司 聚丙烯部 營業處

公司電話：886-2-27122211 轉 6137 公司傳真：886-2-27181230

公司地址：10508 台北市松山區敦化北路 201 號前棟八樓

E-mail：nico1@fpc.com.tw

Raw materials for Fuel Tank Cap



POM (FPC)

FORMOCON®

POLYOXYMETHYLENE (POM)

ACETAL COPOLYMER

Product Features and Benefits:

POM is a type of highly crystalline resin that possesses the following characteristics:

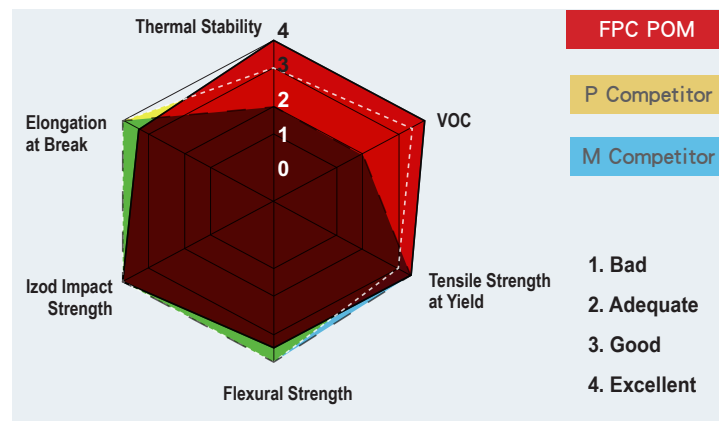
1. Excellent rigidity, creep and fatigue resistance.
2. Small coefficient of friction, wear resistance, and self-lubricating functions.
3. Small coefficient of thermal expansion, and excellent dimensional stability.
4. Oil and organic solvent resistance.

Its main applications are in interior auto parts that require rigidity, lubricity, fatigue resistance, and other such properties.

Processing Methods: (1) Designed for injection molding.
(2) Designed for extrusion molding.



Comparison of FPC POM with a Typical Competitor:



Products Specifications:

Grade			General Purpose Grade				
			FM025	R6	FM090	FM130	FM270
Characteristics			High viscosity	Standard Toughening	Standard Fluidity	Medium Fluidity	High Fluidity
Processing methods			Extrusion/ Injection	Injection	Injection	Injection	Injection
Properties	Unit	Test Method	Typical Value				
Melt Index	g/10min	ASTM D1238	2.5	6	9	13	27
Tensile Strength at Yield	kg/cm ²	ASTM D638	610	620	620	620	620
Flexural Strength	kg/cm ²	ASTM D790	950	950	950	950	950
Rockwell Hardness	M-scale	ASTM D785	78	80	80	80	80
Izod Impact Strength	kg.cm/cm 23°C	ASTM D256	7.6	7.0	6.5	6.0	5.4
HDT	°C @18.6kgf/cm ²	ASTM D648	110	110	110	110	110

Contact Information:

Formosa Plastics Corporation Polypropylene Div. Sales Dept.

TEL: 886-2-27122211 EXT. 6137 FAX: 886-2-27181230

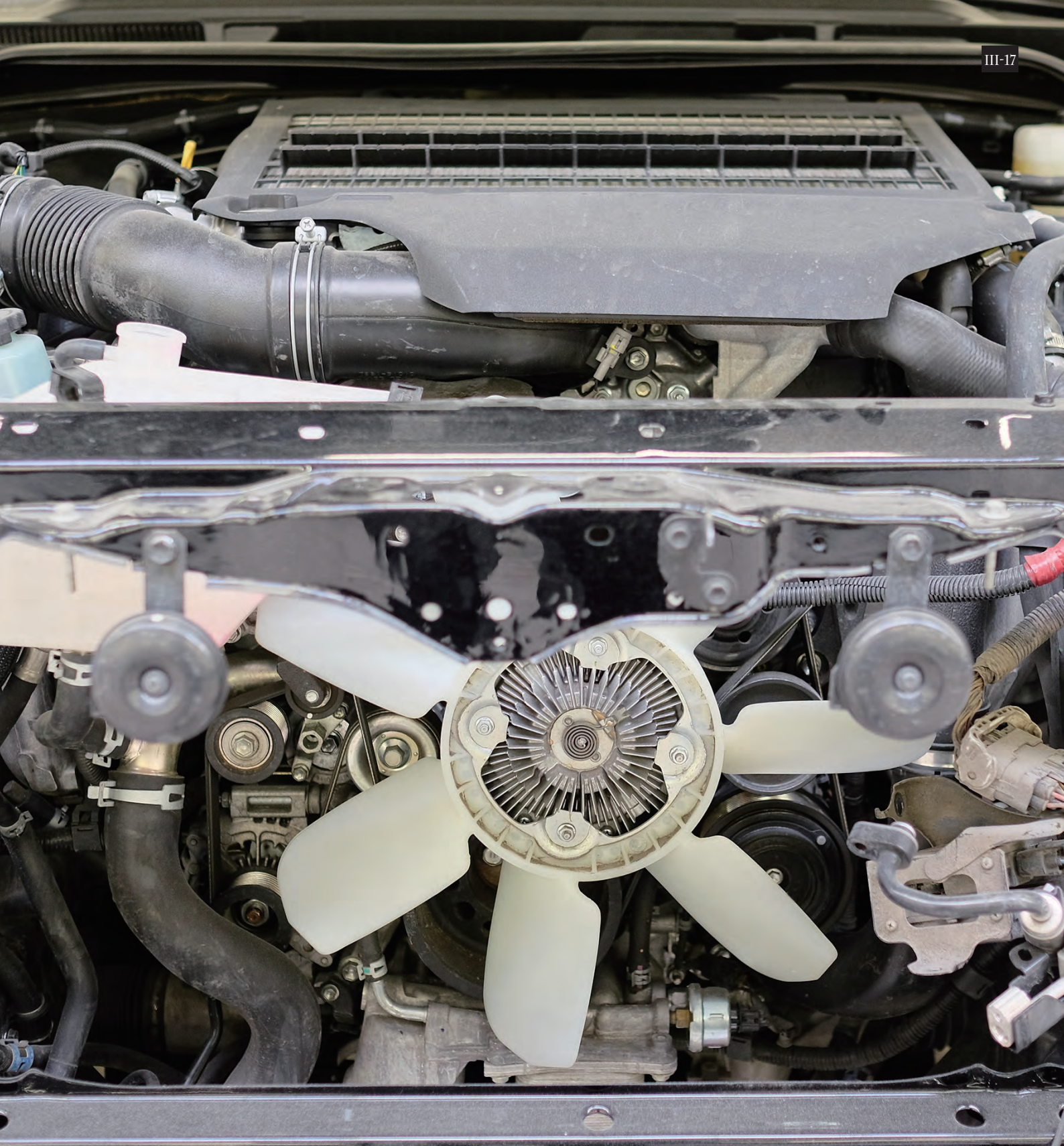
ADD.: 8F., No. 201, Tung Hwa N. Road, Songshan Dist., Taipei City 10508, Taiwan (R.O.C.)

E-mail: nico1@fpc.com.tw

台塑企業**汽車部件** 使用材料

冷卻風扇葉片 Cooling Fan

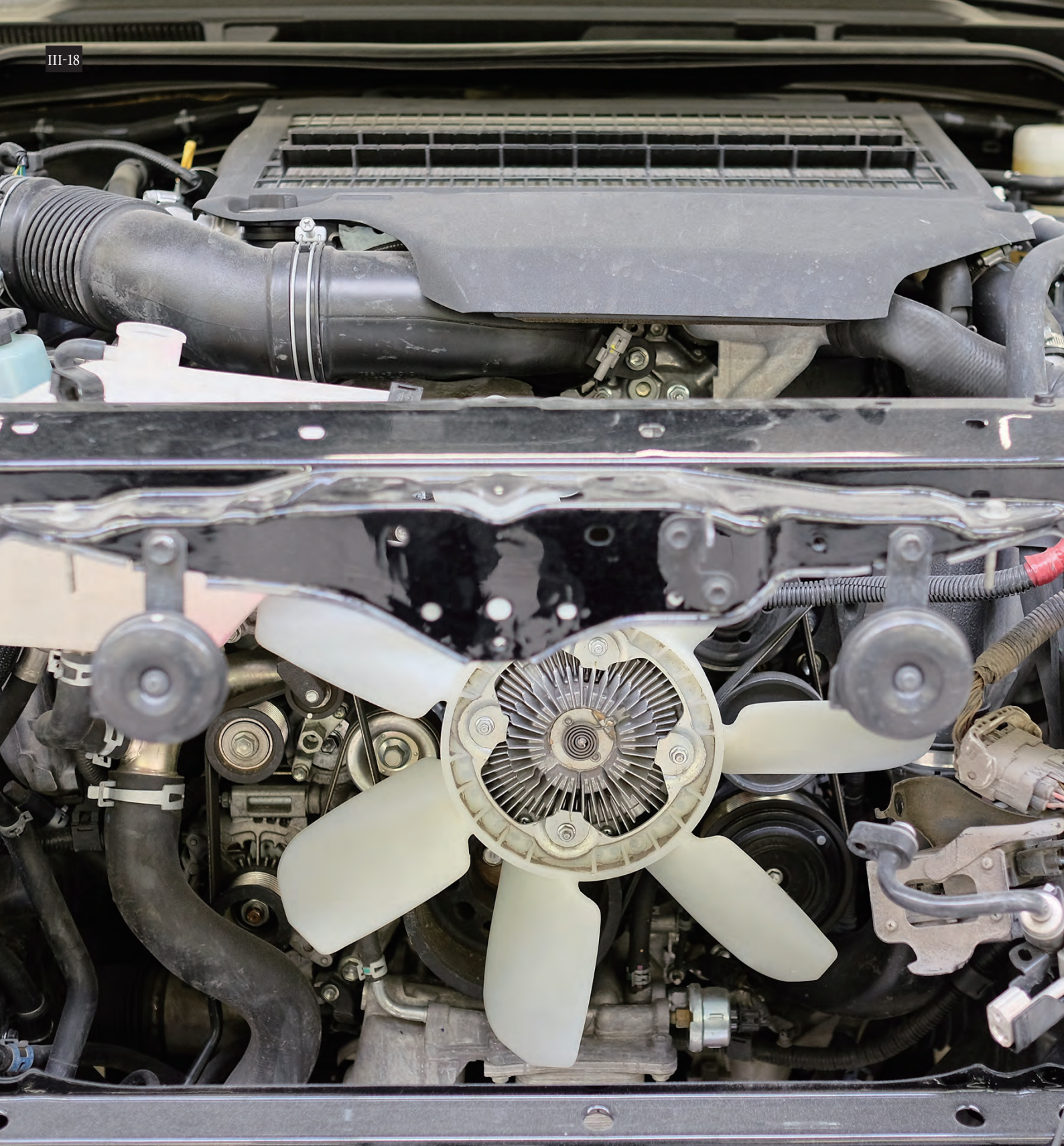




高剛性、高抗熱變形

高抗熱變形特性，使冷卻風扇葉片於高溫環境下運轉不變形，保有散熱功能，確保引擎室溫度不過高。





HIGH RIGIDITY, HIGH TEMPERATURE DEFORMATION RESISTANCE

The high temperature deformation resistant property of materials used in cooling fan blades will help prevent high temperature deformation, and its good heat dissipation will help prevent the engine compartment from overheating.



冷卻風扇葉片原料



PP 產品 (台塑公司)

1124/4304

產品特性及優點：

台塑 PP 產品用於汽車零件有輕量化、低成本、加工性佳優點，並可依其特性進行改質（如：添加滑石粉、玻纖等），以產製各式化汽車零組件。

4304 屬於高流動高衝擊的熱塑性聚烯烴 (RTPO) 材料，與 1124 及 20 % 玻纖複合 (compound) 後即可達到該產品物性要求，不須外加大量增韌劑。

加工方式：注塑成型。

產品規格表：

種類		耐衝擊共聚物		均聚物		
產品型號		4304	對抗品	1124	對抗品	
項目	單位	平均值				
熔融指數	g/10min	30	29	15	14.5	
降伏強度	kg/cm ²	230	230	490	400	
剛性係數	kg/cm ²	9,000	9,000	22,000	20,000	
Izod 耐衝擊強度	kg-cm/cm	常溫 (23°C)	45	25	3	3
		低溫 (-20°C)	10	8	-	-
熱變形溫度	°C	100	100	135	122	

聯繫方式：台灣塑膠工業股份有限公司 聚丙烯部 營業處

公司電話：886-2-27122211 轉 6169 公司傳真：886-2-27181230

公司地址：10508 台北市敦化北路 201 號前棟八樓

E-mail：eric0602@fpc.com.tw、tbcharles@fpc.com.tw

Raw materials for Cooling Fan



PP Resins (FPC)

1124/4304

Product Features and Benefits:

Using FPC's PP raw materials in auto parts provides lightweight, low cost, and good workability characteristics and can be modified according to their properties (such as adding talc powder, glass fiber, etc.) to produce a variety of auto parts and components.

4304 is a type of thermoplastic polyolefin (RTPO) material with high fluidity and high impact strength. When mixed with 1124 and 20% fiberglass compound, it can achieve its physical properties without having to add a large amount of toughener.

Processing Methods: Designed for injection molding.

Products Specifications:

Type		Impact Copolymer		Homopolymer		
Grade		4304	Competitor	1124	Competitor	
Properties	Unit	Typical Value				
Melt Index	g/10min	30	29	15	14.5	
Tensile Strength at Yield	kg/cm ²	230	230	490	400	
Flexural Modulus	kg/cm ²	9,000	9,000	22,000	20,000	
Izod impact Strength	kg-cm/cm	23°C	45	25	3	3
		-20°C	10	8	-	-
HDT	°C	100	100	135	122	

Contact Information:

Formosa Plastics Corporation Polypropylene Div. Sales Dept.

TEL: 886-2-27122211 EXT. 6169 FAX: 886-2-27181230

ADD.: 18F., No. 201, Tung Hwa N. Road, Songshan Dist., Taipei City 10508, Taiwan (R.O.C.)

E-mail: eric0602@fpc.com.tw / tbcharles@fpc.com.tw

冷卻風扇葉片原料



PP 產品 (台化公司)

產品特性及優點：

台化發揮 Chisso Know-how 氣相製程，開發出多款高附加價值 Impact Copolymer，供應汽車 Compound 行業使用。

A. 台化 PP 已通過認證資料：

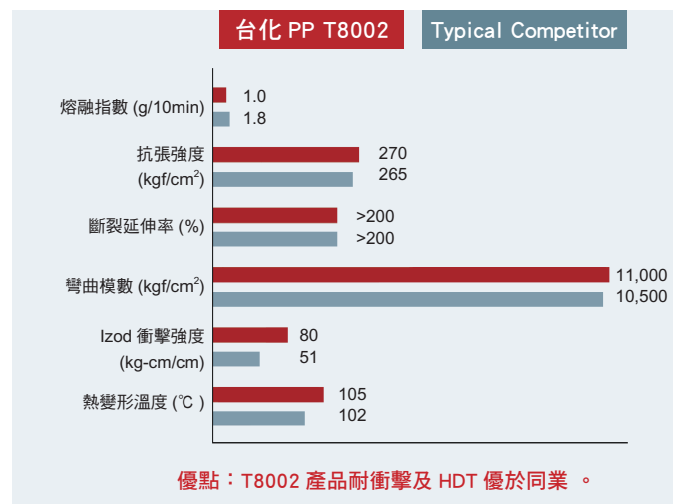
(1)ISO 9001 ,14001 (2)OHSAS 18001 (3) 環保證明。

B. T8002 取得認證資料：

(1)FDA Compliance (2)UL 94 HB (3)RoHS
(4)REACH SVHC (5)PAHS

加工方式：押製成型。

台化 PP T8002 產品與 Typical Competitor 物性比較：



產品規格表：

種類			耐衝擊共聚物	
產品型號			T8002	
特性			耐衝擊優、低 MI	
應用			複合材、冷卻風扇葉片	
項目	單位	試驗方法	平均值	
熔融指數	g/10min	ASTM D1238	1.0	
抗張強度	kgf/cm ²	ASTM D638	270	
斷裂延伸率	%	ASTM D638	> 200	
彎曲模數	kgf/cm ²	ASTM D790A	11,000	
硬度	R-scale	ASTM D785	80	
Izod 衝擊強度	kgf-cm/cm	常溫 (23°C)	ASTM D256	80
熱變形溫度	°C	ASTM D648	105	

聯繫方式：台灣化學纖維股份有限公司 塑膠部 營業二處

公司電話：886-2-27178355 公司傳真：886-2-27131649

公司地址：10508 台北市松山區敦化北路 201 號前棟二樓

E-mail：anderson.plastics@fcfc.com.tw

Raw materials for Cooling Fan



PP Resins (FCFC)

Product Features and Benefits:

FCFC has exhibited the technical know-how of the Chisso gas-phase process to develop a number of high value-added impact copolymers into compound materials and supply them to the auto industry.

A. FCFC's PP has received :

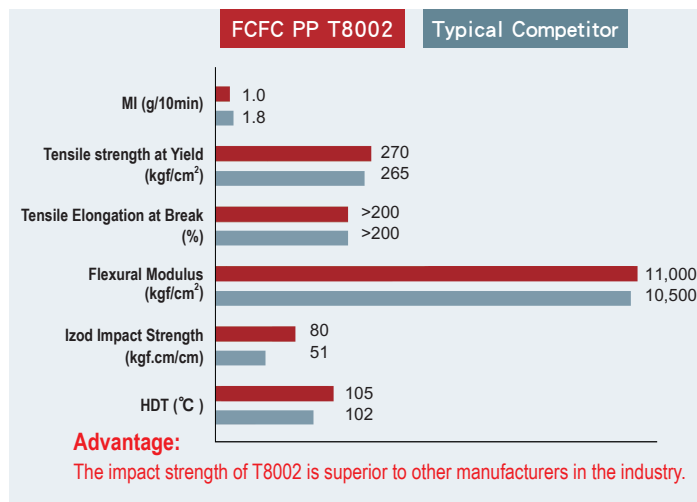
- (1) ISO 9001 & 14001 (2) OHSAS 18001
- (3) environmental protection certification.

B. T8002 has obtained certification from:

- (1) FDA (2) UL 94 HB (3) RoHS (4) REACH SVHC (5) PAHS.

Processing Methods: Designed for extrusion molding.

Comparison of FCFC PP T8002 with a Typical Competitor:



Products Specifications:

Type			Impact Copolymer
Grade			T8002
Characteristics			Excellent impact strength, Low melt flow index (MI)
Applications			Composite materials, Cooling fans
Properties	Unit	Test Method	Typical Value
Melt Index	g/10min	ASTM D1238	1.0
Tensile Strength at Yield	kgf/cm ²	ASTM D638	270
Tensile Elongation at Break	%	ASTM D638	> 200
Flexural Modulus	kgf/cm ²	ASTM D790A	11,000
Hardness	R-Scale	ASTM D785	80
Izod Impact Strength	kgf-cm/cm	23°C ASTM D256	80
HDT	°C	ASTM D648	105

Contact Information:

Formosa Chemicals & Fibre Corporation Plastics Div. 2nd Sales Dept.

TEL: 886-2-27178355 FAX: 886-2-27131649

ADD.: 2F., No. 201, Tung Hwa N. Road, Songshan Dist., Taipei City 10508, Taiwan (R.O.C.)

E-mail: anderson.plastics@fcfc.com.tw

冷卻風扇葉片原料



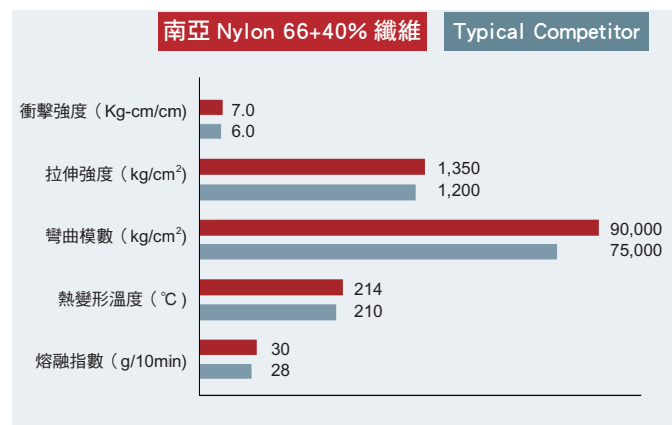
改性塑膠(工程塑膠)產品(南亞公司): Nylon66 複材
Nylon 66+40% 纖維 規格: 6210G8MBK1

產品特性及優點:

南亞改性塑膠(工程塑膠)產品包含 PBT、PET、NYLON 6、NYLON 66、PC、PP、PPE 等系列產品, 玻纖強化、耐燃等規格種類齊全, 通過 ISO 9001、ISO 14001、TS 16949 認證, 品質穩定, 成型加工性佳, 提供製品優越之機械強度, 高熱變形溫度、尺寸安定性、電器性質等, 並擁有符合環保要求之非鹵素防火材料, 適用於汽車內裝及外裝各種等各種零配件。

加工方式: 射出成型。

南亞 Nylon66 複材與 Typical Competitor 物性比較:



產品規格表:

種類			Nylon 66 複材
產品型號			6210G8MBK1
特性			高強度、高抗熱變形、低翹曲、尺寸安定性佳
應用			汽車冷卻風扇
項目	單位	試驗方法	平均值
熔融指數	g/10min	ASTM D1238	30
拉伸強度	kg/cm ²	ASTM D638	1,350
彎曲模數	kg/cm ²	ASTM D790	90,000
Izod 衝擊強度	kg.cm/cm	ASTM D256	7.0
熱變形溫度	°C	ASTM D648	214

聯繫方式: 南亞塑膠工業股份有限公司 塑三部 產銷四組

公司電話: 886-2-27178507、886-2-27122211 轉 5814 公司傳真: 886-2-27198661

公司地址: 10508 台北市松山區敦化北路 201 號後棟三樓

E-mail: epanya@npc.com.tw

Raw materials for Cooling Fan



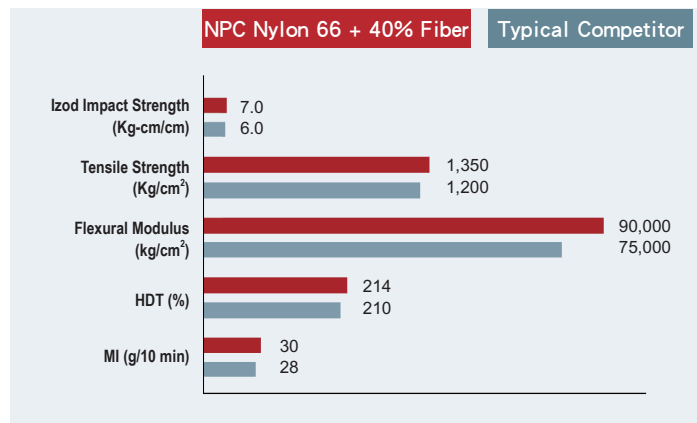
Modified plastics (engineering plastics) (NPC): Nylon 66 composite
Nylon 66 + 40% Fiber Grade: 6210G8MBK1

Product Features and Benefits:

Nan Ya's modified plastics (engineering plastics) are available in PBT, PET, NYLON 6, NYLON 66, PC, PP, PPE, and other materials with a wide range of specifications and properties, including reinforced glass fiber, flame retardant, stable quality, and good moldability, all of which conform to ISO 9001, ISO 14001, and TS 16949 certifications. These materials can help produce products with excellent mechanical strength, high heat distortion temperature, dimensional stability, electrical properties, etc. Environmentally friendly halogen-free flame retardant materials are also available and are suitable for use in car interior/exterior decorations, as well as various parts and accessories.

Processing Methods: Designed for injection molding.

Comparison of NPC Nylon 66 Composite with a Typical Competitor:



Products Specifications:

Type			Nylon 66 Composite
Grade			6210G8MBK1
Characteristic			High tenacity, High heat distortion temperature resistance, Low warpage, Good dimensional stability
Application			Cooling fan
Properties	Unit	Test Method	Typical Value
Melt Index	g/10min	ASTM D1238	30
Tensile Strength	kg/cm ²	ASTM D638	1,350
Flexural Modulus	kg/cm ²	ASTM D790	90,000
Izod impact Strength	kg.cm/cm	ASTM D256	7.0
HDT	°C	ASTM D648	214

Contact Information:

Nan Ya Plastics Corporation Plastics 3rd Div. Engineering Plastics Dept.

TEL: 886-2-27178507/ 886-2-27122211 EXT. 5814 FAX: 886-2-27198661

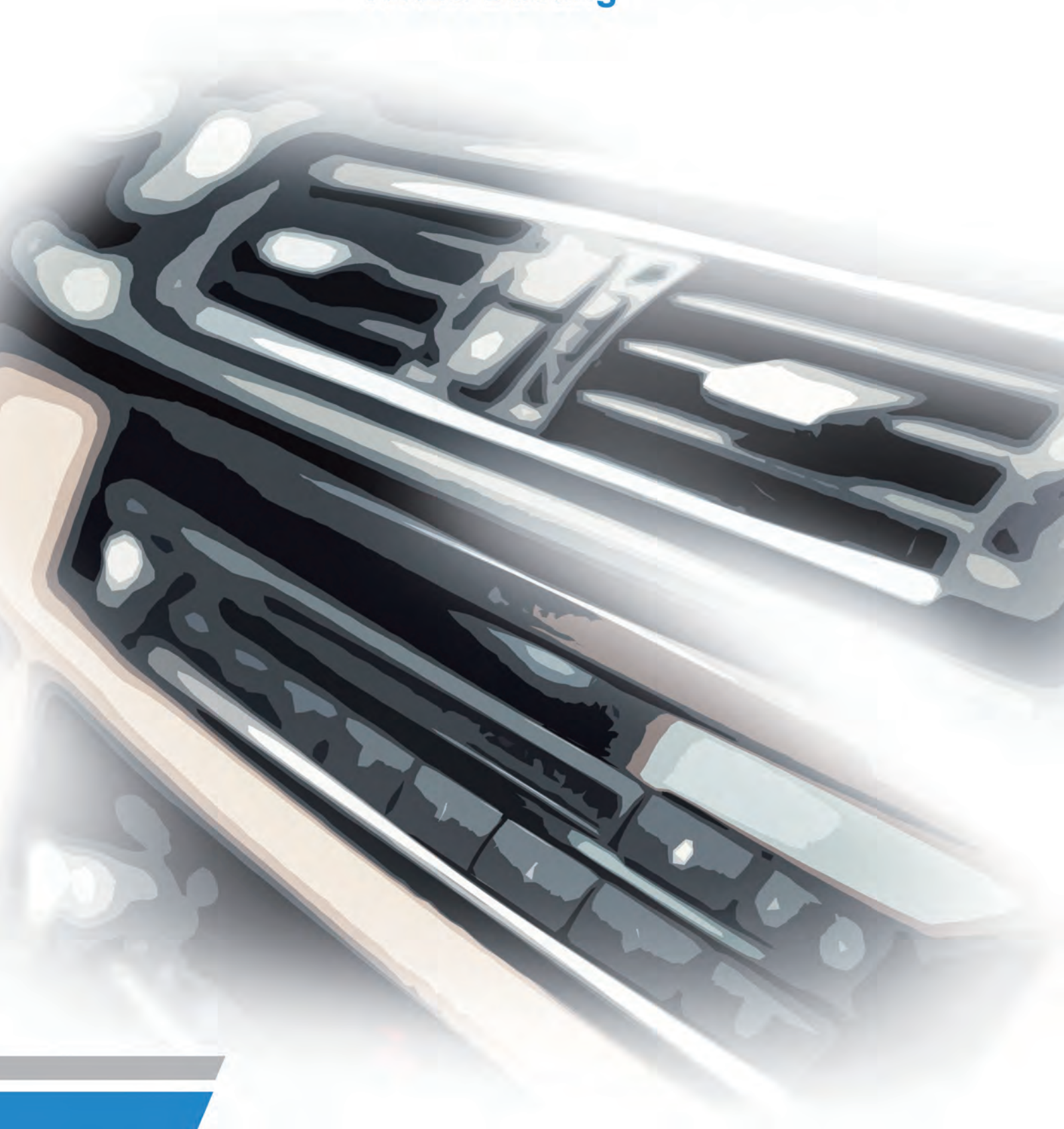
ADD.: 3F., No. 201, Tung Hwa N. Road, Songshan Dist., Taipei City 10508, Taiwan (R.O.C.)

E-mail: epnanya@npc.com.tw

台塑企業**汽車部件** 使用材料

空調系統組件

**Under Hood Air Management &
HVAC Ducting**





高剛性、優異的耐候性

極佳的耐候性應用於空調系統組件面對不同溫度環境下不變形。





HIGH RIGIDITY, OUTSTANDING WEATHER RESISTANCE

The excellent weather resistant property of air conditioning system components will help prevent deformation in different environments.



汽車空調系統組件原料



Formolene 6600A 同時具有優異的耐衝擊及剛性的特性，並於連續押出及吹塑成型加工上能保有熱穩定性。

Formolene® PP 產品（台塑美國公司）

台塑美國公司提供多種的聚丙烯樹脂產品，適用於車用市場各部件加工應用。

Formolene® PP 設計可達到全球車廠 (OEM) 引擎室各部件嚴苛的規範，同時提供優化的加工及二次組裝製造的特性。Formolene® PP 具有多種的車用級規格樹脂，適用於低熔指押出成型與高熔指射出成型及複合材混煉等加工方式，提供耐衝擊性與剛性平衡的特點，且能使產品輕量化，提升生產效率的優勢以降低加工成本。

產品特性及優點：

Formolene® 6600A

6600A 是一個低熔指數押出吹製級產品，熔融指數 0.5，為高耐衝擊 PP 聚合物，主要用於大型引擎室下空調系統及汽車內裝空調系統。

低的熔融指數，於真空成型及押出成型有良好的加工特性，針對大型零件押出吹製後提供良好的強度，吹製成型加工具有熱穩定性。汽車零件應用於一般小客車、大客車及船舶應用，面對的低溫及高溫環境下能保有高耐衝擊效果。

加工方式：真空吹製及押出吹製成型。

產品規格表：

產品型號			6600A
項目	單位	試驗方法	平均值
熔融指數	g/10min	ASTM D1238	0.5
彎曲模數	MPa @ 1% secant	ASTM D790	1,069
抗張強度	MPa	ASTM D638	25
Izod 衝擊強度	@ RT KJ/m ²	ASTM D256	NB
	@ -30 Dec C KJ/m ²		na
熱變形溫度	Dec C @ 0.45MPa	ASTM D648	86

聯繫方式：Formosa Plastics Corporation, U.S.A.

公司電話：1-888-372-8723 聯絡人：Simon Hwang

公司地址：9 Peach Tree Hill Rd., Livingston, NJ 07039

E-mail：shwang@fpcusa.com

Raw materials for

Under Hood Air Management & HVAC Ducting



Formolene 6600A offers a robust balance of impact and stiffness properties, with thermal stability for multiple pass utility in continuous extrusion blow molding and sheet extrusion processes.

Formolene® PP resins (FPC USA)

FPC USA offers a broad range of polypropylene resins for the transportation market. Our Formolene automotive resins are designed to meet the design demands of global automotive OEM specifications, as well as provide for optimized processing and secondary fabrication assembly.

Formolene polypropylene automotive resins are available for low MFR extrusion processes and high MFR injection molding and compounding processes, offering a broad range of impact stiffness balanced properties, in line with cost reduction efforts in terms of part lightweighting and increased production rates.

Formolene® 6600A

Product Features and Benefits:

6600A is fractional MFR profile extrusion and extrusion blow molding grade high impact polypropylene copolymer designed for large under hood HVAC ducting and interior air management systems.

Its low MFR makes it suitable for profile extrusion and thermoforming of automotive parts, in addition to providing excellent melt strength for large part extrusion blow molding, with multiple pass thermal stability. It delivers high impact performance at both elevated and low temperatures as desired by the transportation industry for automotive, recreation vehicles and marine applications.

Processing Methods:

Designed for sheet extrusion thermoforming and extrusion blow molding.

Products Specifications:

Grade			6600A
Properties	Unit	Test Method	Typical Value
MFR	g/10min	ASTM D1238	0.5
Flexural Modulus	MPa @ 1% secant	ASTM D790	1,069
Tensile Strength	MPa	ASTM D638	25
Notched Izod Impact	@ RT KJ/m ²	ASTM D256	NB
	@ -30 Dec C KJ/m ²		na
HDT	Dec C @ 0.45MPa	ASTM D648	86

Contact Information:

Formosa Plastics Corporation, U.S.A.

TEL: 1-888-372-8723 Contact: Simon Hwang

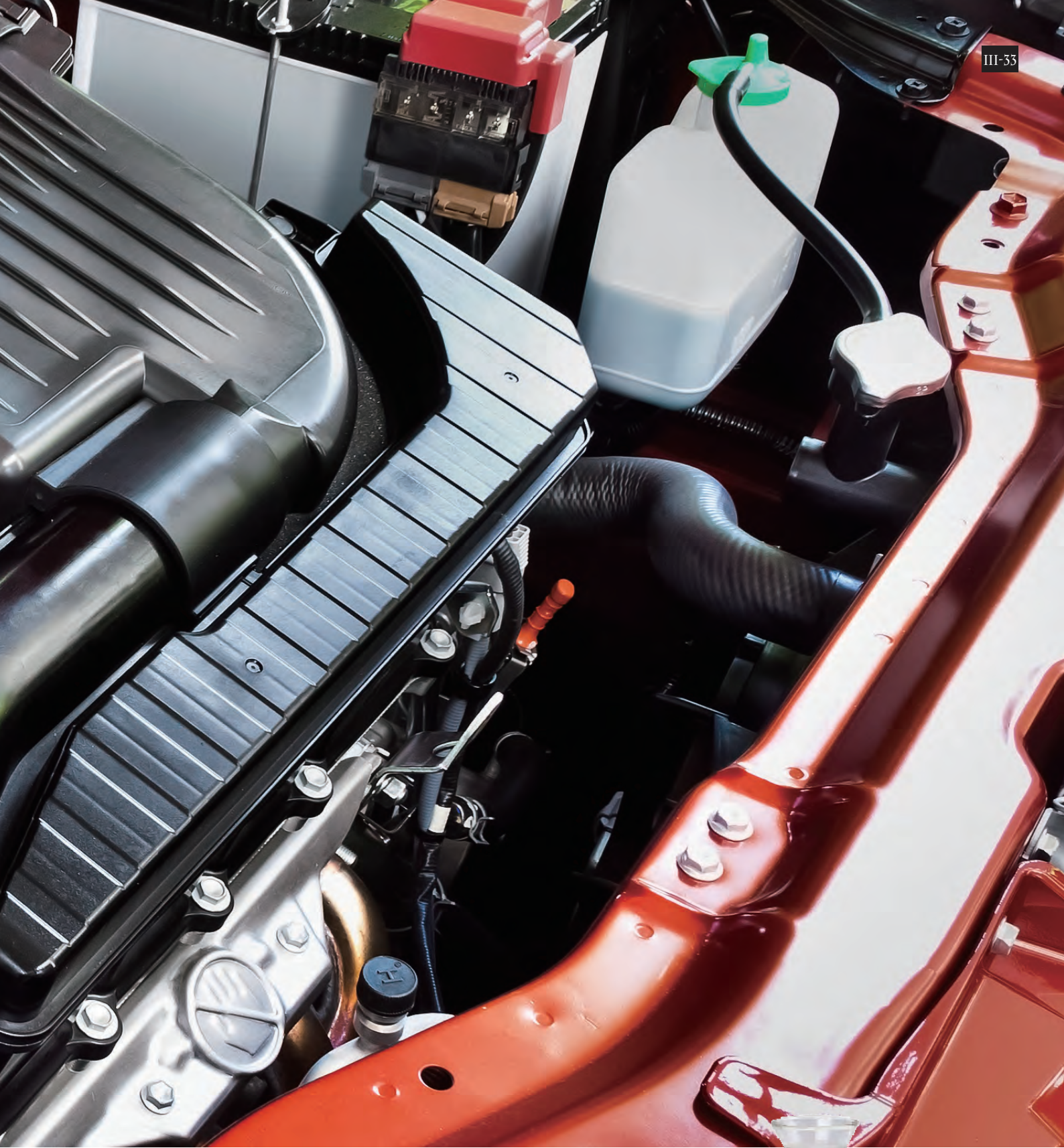
ADD.: 9 Peach Tree Hill Rd., Livingston, NJ 07039

E-mail: shwang@fpcusa.com

台塑企業**汽車部件** 使用材料

引擎冷卻液及抗凍劑
Coolant & Antifreeze

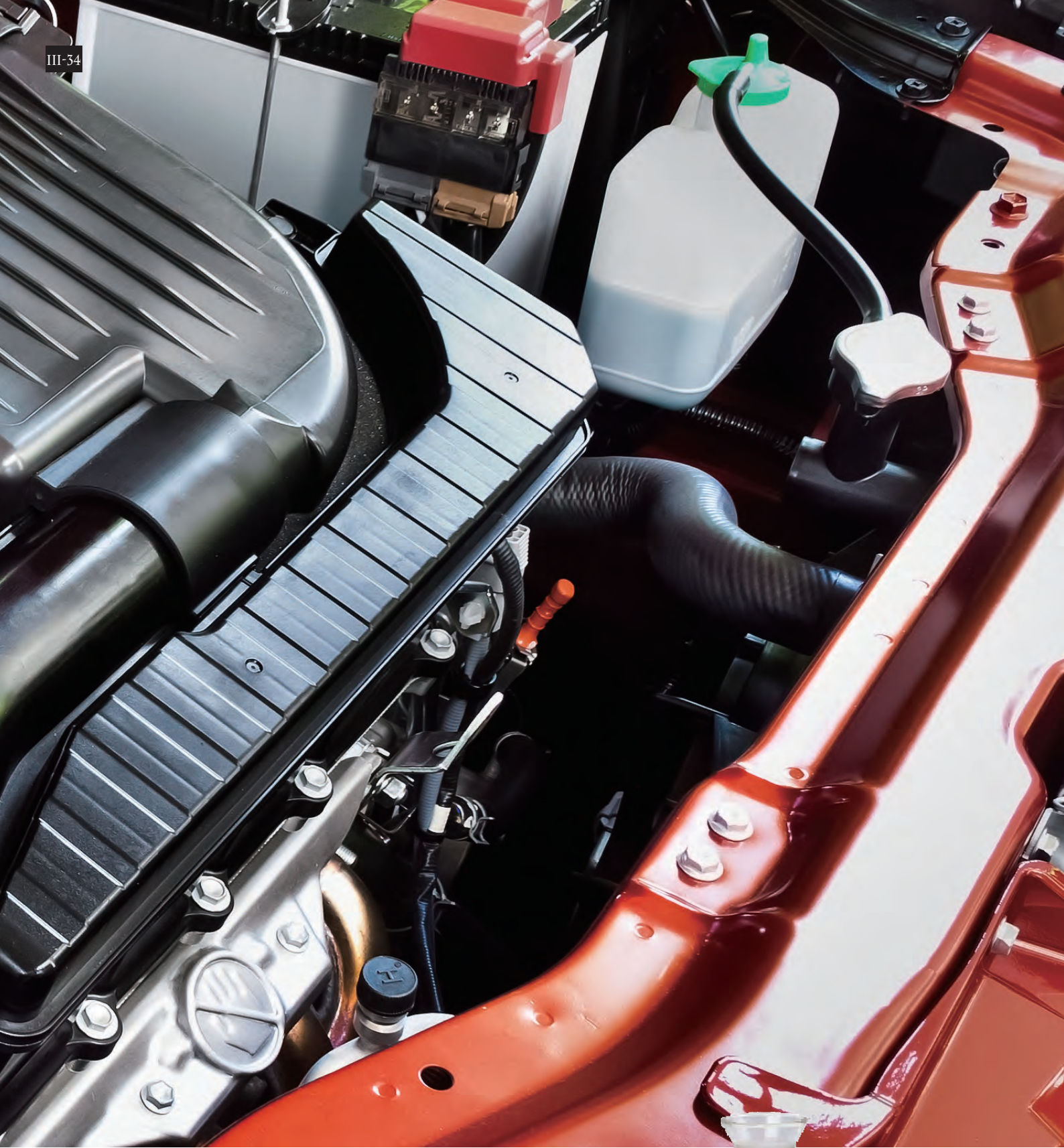




長效型冷卻液

於各種氣候溫度下，具有優異的防凍性能，可預防引擎室過熱。





LONG LIFE COOLANT

It features an outstanding anti-freezing property in any weather conditions to help it prevent the engine compartment from overheating.



引擎室冷卻液、抗凍劑



乙二醇產品（南亞公司）

產品特性及優點：

乙二醇為一種有甜味的液體，沸點頗高，冰點為攝氏零下十三度，但若與水混合一比一時，冰點更降至攝氏零下三十六度。此混合物揮發時，主要為其中之水分，汽車原廠可直接將抗凍液設於密閉管槽，製成永久密閉式，內外都不會洩漏，可使用數年或數十年而不須添加。乙二醇是長效型冷卻液，它具有各種氣候條件優異的防凍性能及預防過熱。廣泛應用於汽車的引擎冷卻系統。

加工方式：

乙二醇加軟水調成 40%-50% 溶液。

產品規格表：

乙二醇特性
外觀：澄清無色具吸濕性的液體
嗅覺閾值：0.08ppm
pH 值：7（中性）
自燃溫度：398°C
密度：1.1135 g/cm ³ 20°C /1atm

聯繫方式：南亞塑膠工業股份有限公司 化工三部

公司電話：886-2-2712-2211 轉 6880 公司傳真：886-2-25475259

公司地址：10508 台北市松山區敦化北路 201 號前棟三樓

E-mail：ShyuCB@npc.com.tw

Coolant & Antifreeze



EG Product (NPC)

Product Features and Benefits:

Ethylene glycol is a sweet liquid with a high boiling point and a freezing point of -13°C , however, if mixed with water in a ratio of 1:1, its freezing point will drop to -36°C . The mixture is volatile, and as the water can evaporate, auto OEMs can directly seal the antifreeze liquid permanently in the tube to prevent evaporation; it can thus be used for several years or even decades without having to be replenished.

Ethylene glycol is a long-lasting coolant with excellent all-weather anti-freezing and anti-overheating performances and has been used extensively in the engine cooling systems of automobiles.

Processing Methods:

Mixing ethylene glycol with soft water and regulating the solution with a content of 40% to 50%.

Product Features:

Features of Ethylene Glycol
Appearance: Clear & colorless hygroscopic liquid
Odor threshold: 0.08 ppm
pH value: 7 (neutral)
Auto-ignition temperature: 398°C
Density: $1.1135\text{g}/\text{cm}^3$ 20°C / 1atm

Contact Information:

Nan Ya Plastic Corporation Petrochemical 3rd Div

TEL: 886-2-27122211 EXT.6880 FAX: 886-2-25475259

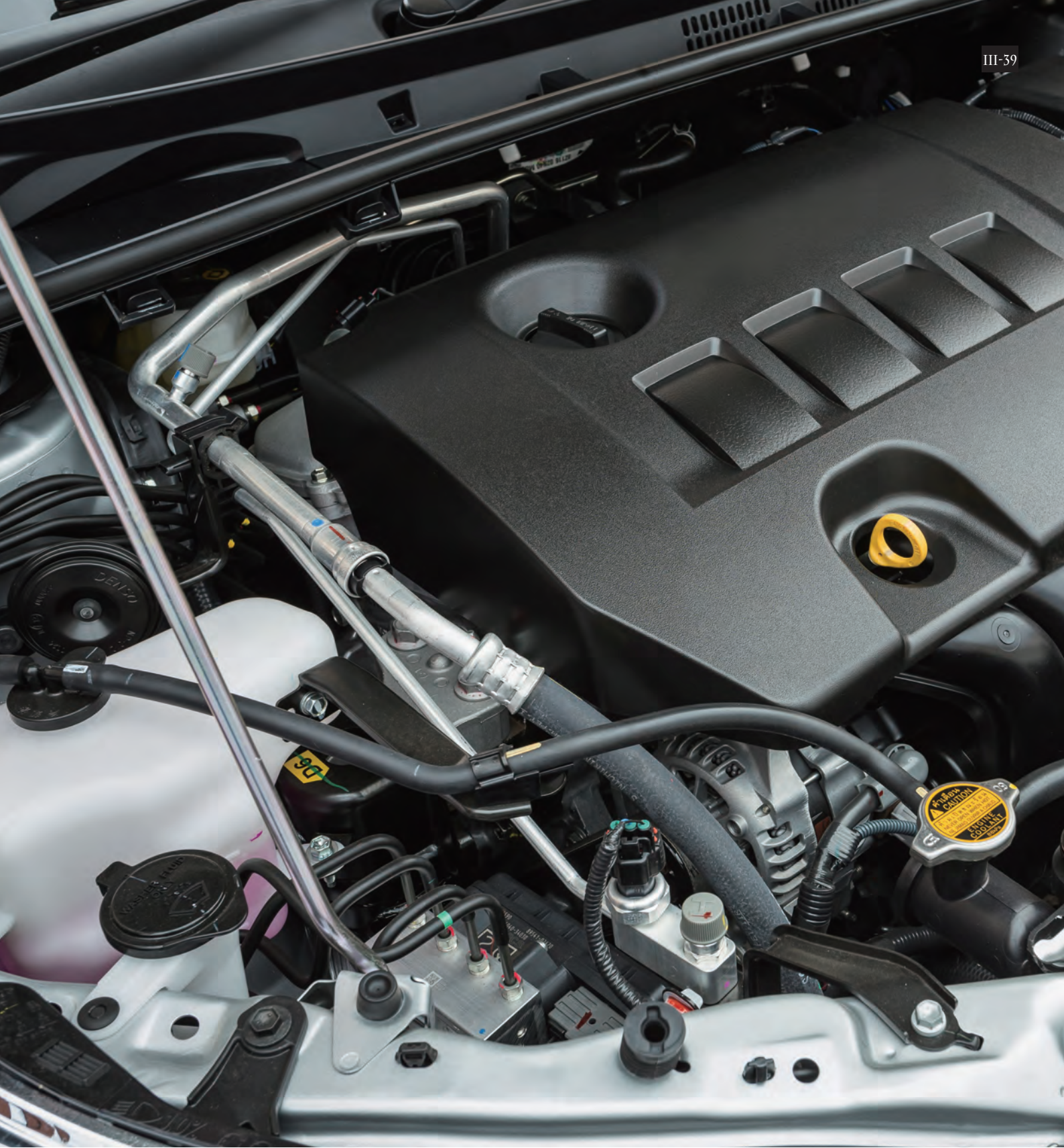
ADD.: 3F., No. 201, Tung Hwa N. Road, Songshan Dist., Taipei City 10508, Taiwan (R.O.C.)

E-mail: ShyuCB@npc.com.tw

台塑企業**汽車部件** 使用材料

副水箱、煞車油杯、雨刷水箱、汽車水箱支架
Coolant Reservoir/Brake Fluid Container/
Wiper Fluid Container/Radiator Mounting

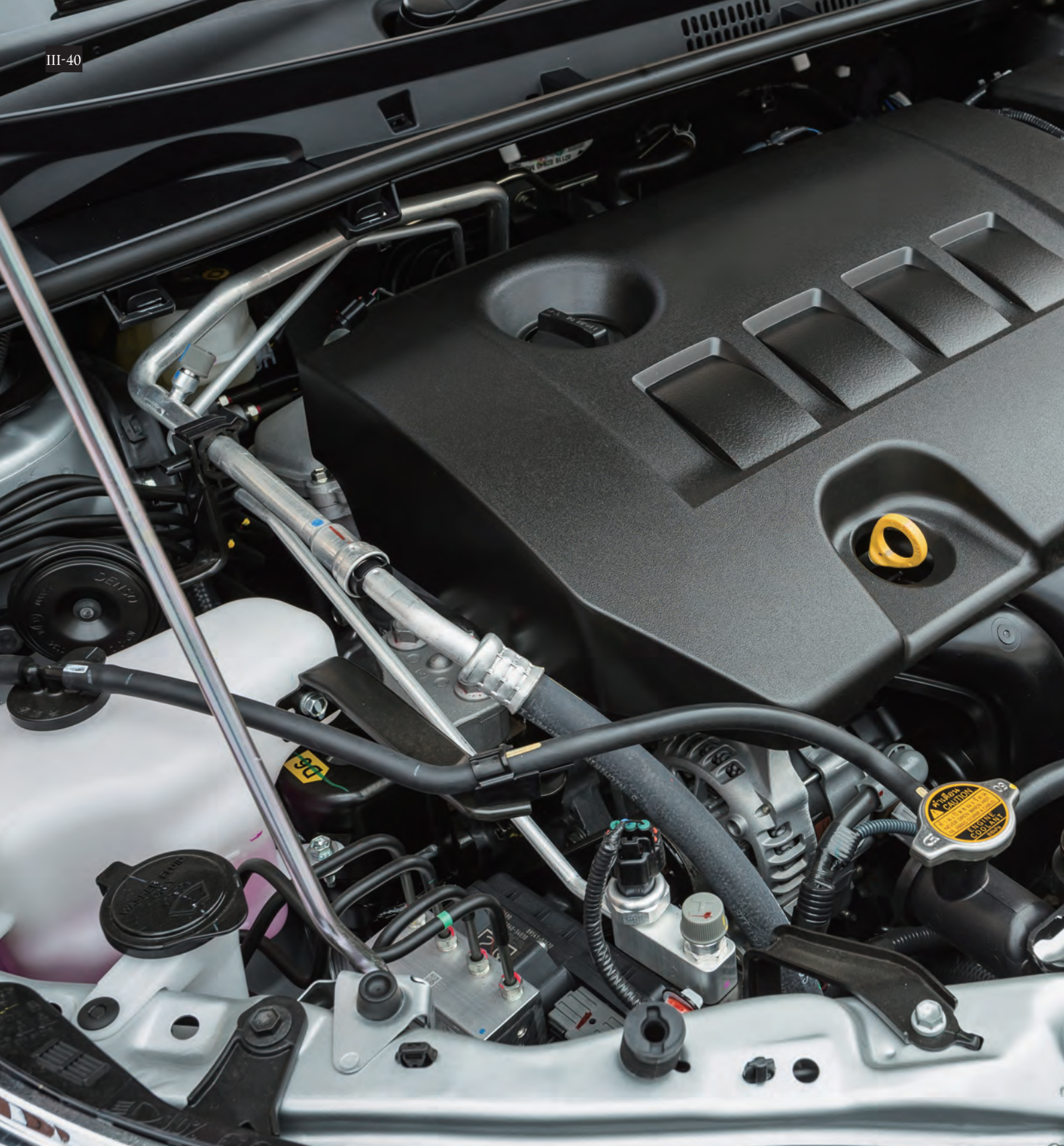




耐油、耐高溫、高抗熱變形

極佳的耐高溫、高抗熱變形特性應用於副水箱，於不同溫度及壓力環境下，有效確保汽車冷卻系統運作正常，保護車輛行駛時安全。





OIL RESISTANCE, HIGH TEMPERATURE RESISTANCE, HIGH TEMPERATURE DEFORMATION RESISTANCE

The excellent high temperature and high temperature deformation resistance properties used in coolant reservoir will help ensure the normal operation of car cooling systems under different temperatures and pressures.



副水箱 / 煞車油杯原料



PP 產品 (台塑公司)

5090T/5003

產品特性及優點：

台塑 PP 產品用於汽車零件有輕量化、低成本、加工性佳優點，並可依其特性進行改質（如：添加滑石粉、玻纖等），以產製各式化汽車零組件。

A.5090T 透明度佳、射出成型佳。

B. 5003 透明度可、抗白化優、低溫脆性佳。

加工方式：(1)5090T 注塑成型 (2) 5003 吹製成型。

產品規格表：

種類		無規共聚物		耐衝擊共聚物	
產品型號		5090T	5003	對抗品	
項目	單位	平均值			
熔融指數	g/10min	15	0.25	4	
降伏強度	kg/cm ²	280	250	240	
剛性係數	kg/cm ²	10,500	8,000	10,500	
Izod 耐衝擊強度	kg.cm/cm	常溫 (23°C)	6	40	85
		低溫 (-20°C)	3	6	8.5
熱變形溫度	°C	95	85	108	
透明度	%	80	40	-	

聯繫方式：台灣塑膠工業股份有限公司 聚丙烯部 營業處

公司電話：886-2-27122211 轉 6169 公司傳真：886-2-27181230

公司地址：10508 台北市松山區敦化北路 201 號前棟八樓

E-mail：eric0602@fpc.com.tw、tbcharles@fpc.com.tw

Raw materials for

Coolant Reservoir & Brake Fluid Container



PP Resins (FPC)

5090T/5003

Product Features and Benefits:

Using FPC's PP raw materials in auto parts provides lightweight, low cost, and good workability characteristics and can be modified according to their properties (such as adding talc powder, glass fiber, etc.) to produce a variety of auto parts and components.

A. 5090T features good transparency and an excellent injection molding effect.

B. 5003 features good transparency, excellent anti-whitening, and good low-temperature brittleness properties.

Processing Methods:

(1) Designed for injection molding.

(2) Designed for blow molding.

Products Specifications:

Type		Random Copolymer		Impact Copolymer	
Grade		5090T	5003	Competitor	
Properties	Unit	Typical Value			
Melt Index	g/10min	15	0.25	4	
Tensile Strength at Yield	kg/cm ²	280	250	240	
Flexural Modulus	kg/cm ²	10,500	8,000	10,500	
Izod Impact Strength	kg.cm/cm	23°C	6	40	85
		-20°C	3	6	8.5
HDT	°C	95	85	108	
Transparency	%	80	40	-	

Contact Information:

Formosa Plastics Corporation Polypropylene Div. Sales Dept.

TEL: 886-2-27122211 EXT. 6169 FAX: 886-2-27181230

ADD.: 8F., No. 201, Tung Hwa N. Road, Songshan Dist., Taipei City 10508, Taiwan (R.O.C.)

E-mail: eric0602@fpc.com.tw / tbcharles@fpc.com.tw

副水箱 / 煞車油杯原料



PP 產品 (台化公司)

產品特性及優點：

台化發揮 Chisso Know-how 氣相製程，高附加價 Impact Copolymer，供應汽車 Compound 行業使用。

B8001 流動性低，易吹塑成型的優點，並具高耐衝擊性、抗低溫脆化的特性。

A. 台化 PP 已通過認證資料：

(1)ISO 9001 ,14001 (2)OHSAS 18001 (3) 環保證明。

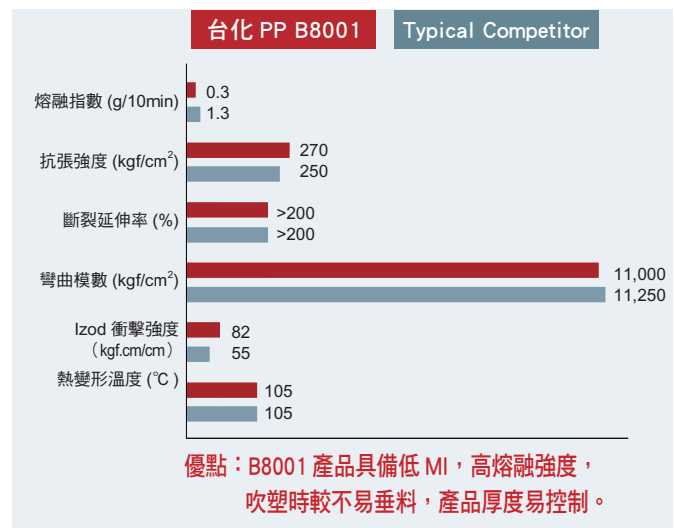
B. B8001 取得認證資料：

(1)FDA Compliance (2)UL 94 HB (3)RoHS

(4)REACH SVHC (5)PAHS。

加工方式：吹製成型。

台化 PP B8001 產品與 Typical Competitor 物性比較：



產品規格表：

種類			耐衝擊共聚物
產品型號			B8001
特性			衝擊性優、低 MI
應用			複合材、副水箱、煞車油杯
項目	單位	試驗方法	平均值
熔融指數	g/10min	ASTM D1238	0.3
抗張強度	kgf/cm ²	ASTM D638	270
斷裂延伸率	%	ASTM D638	> 200
彎曲模數	kgf/cm ²	ASTM D790A	11,000
硬度	R-Scale	ASTM D785	80
Izod 衝擊強度	kgf-cm/cm	常溫 (23°C) ASTM D256	82
熱變形溫度	°C	ASTM D648	105

聯繫方式：台灣化學纖維股份有限公司 塑膠部 營業二處

公司電話：886-2-27178355 公司傳真：886-2-27131649

公司地址：10508 台北市松山區敦化北路 201 號前棟二樓

E-mail：anderson.plastics@fcfc.com.tw

Raw materials for

Coolant Reservoir & Brake Fluid Container



PP Resins (FCFC)

Product Features and Benefits:

FCFC has exhibited the technical know-how of the Chisso gas-phase process to develop a number of high value-added impact copolymers into compound materials and supply them to the auto industry. B8001 features the advantageous properties of low fluidity, can be easily blow molded, and has high impact strength and low temperature brittleness resistance.

A. FCFC's PP has received:

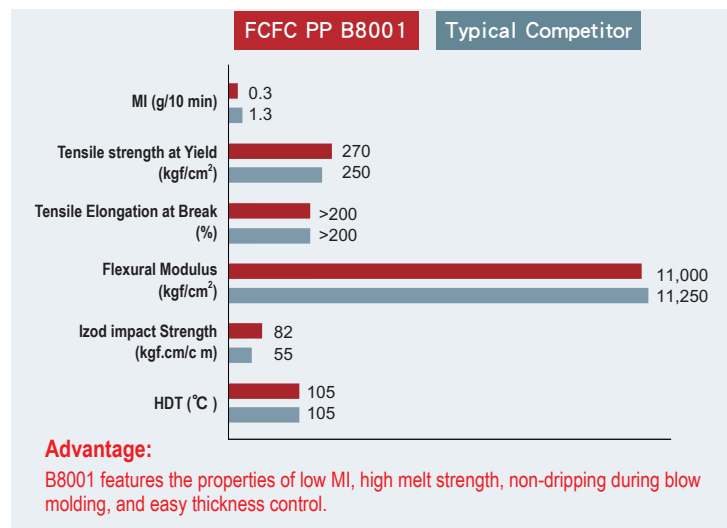
- (1) ISO 9001 & 14001 (2) OHSAS 18001
(3) environmental protection certification.

B. B8001 has obtained certification from:

- (1) FDA (2) UL 94 HB (3) RoHS (4) REACH SVHC (5) PAHS.

Processing Methods: Designed for blow molding.

Comparison of FCFC PP B8001 with a Typical Competitor:



Products Specifications:

Type			Impact Copolymer
Grade			B8001
Characteristics			Excellent impact strength, Low melt flow index (MI)
Applications			Composite materials, Coolant reservoir, Brake Fluid Container
Properties	Unit	Test Method	Typical Value
Melt Index	g/10min	ASTM D1238	0.3
Tensile Strength at Yield	kg/cm ²	ASTM D638	270
Tensile Elongation at Break	%	ASTM D638	> 200
Flexural Modulus	kgf/cm ²	ASTM D790A	11,000
Hardness	R-Scale	ASTM D785	80
Izod impact Strength	kg-cm/cm	23°C ASTM D256	82
HDT	°C	ASTM D-648	105

Contact Information:

Formosa Chemicals & Fibre Corporation Plastics Div. 2nd Sales Dept.

TEL: 886-2-27178355 FAX: 886-2-27131649

ADD.: 2F., No. 201, Tung Hwa N. Road, Songshan Dist., Taipei City 10508, Taiwan (R.O.C.)

E-mail: anderson.plastics@fcfc.com.tw

副水箱、雨刷水箱原料



PE 產品 (台塑公司)

產品特性及優點：

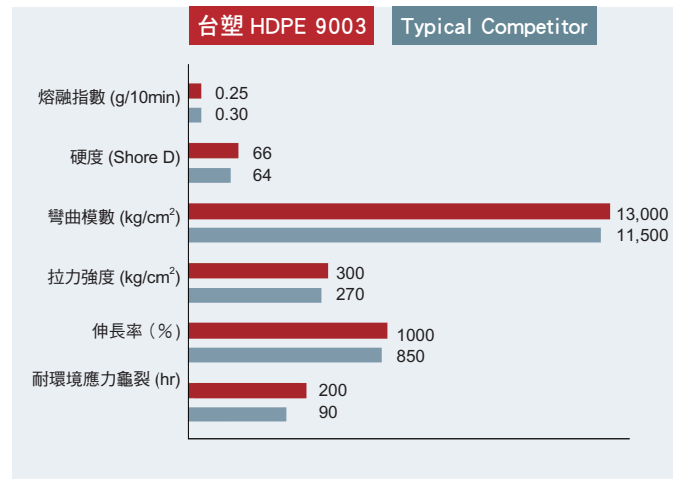
PE 產品具有良好的耐溫、耐油性及耐環境應力龜裂性，且絕緣性及耐寒性佳，以注塑、吹塑、熱壓等方式加工，主要應用於汽車內裝、外裝、引擎室零件。

認證資料：ISO 14001/ ISO 9001/ OHSAS 18001。

驗證測試報告：US FDA/ 歐盟 RoHS/ 歐盟 EU10 食品接觸溶出試驗 / EN 71-3 重金屬檢測。

加工方式：吹製成型。

台塑 HDPE9003 產品與 Typical Competitor 物性比較：



產品規格表：

產 品			HDPE
產品型號			9003
特 性			耐環境應力龜裂性佳
應 用			雨刷水箱、冷卻水副水箱
項目	單位	測試方法	平均值
熔融指數 (MI _{2.16})	g/10min	ASTM D1238	0.25
密度	g/cm ³	ASTM D1505	0.952
熔點	°C	DSC	132
拉力降伏強度	Kg/cm ²	ASTM D638	270
拉力斷裂強度	Kg/cm ²	ASTM D638	300
斷裂伸長率	%	ASTM D638	1,000
艾氏衝擊強度	Kg-cm/cm notch	ASTM D256	13
硬度	Shore A/D	ASTM D2240	-- / 66
耐環境應力龜裂性	Hours	ASTM D1693	200

聯繫方式：台灣塑膠工業股份有限公司 聚烯部 營五處

公司電話：886-2-27122211 轉 8140 公司傳真：886-2-27193260、886-2-27178176

公司地址：10508 台北市松山區敦化北路 201 號後棟四樓

E-mail：formosa_pe@fpc.com.tw

Raw materials for

Coolant Reservoir & Wiper Fluid Container



PE Resins (FPC)

Product Features and Benefits:

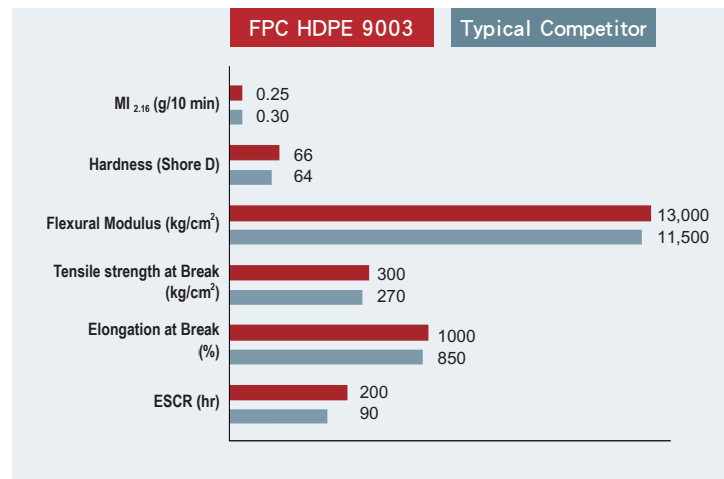
PE features good heat resistance, oil resistance, environmental stress cracking resistance, insulation, and cold resistance. It is mainly used in interior and exterior auto parts and engine compartment parts and can be processed by injection molding, blow molding, thermoforming, etc.

Certifications: ISO 14001 / ISO 9001 / OHSAS 18001

Verification test reports: US FDA / EU RoHS / EU10 food contact dissolution test / EN 71-3 heavy metals test

Processing Methods: Designed for blow molding.

Comparison of FPC HDPE 9003 with a Typical Competitor:



Products Specifications:

Product		HDPE	
Grade		9003	
Characteristics		Environmental stress cracking resistance	
Applications		Wiper water tanks, Coolant reservoir	
Properties	Unit	Test Method	Typical Value
Melt Index (MI _{2.16})	g/10min	ASTM D1238	0.25
Density	g/cm ³	ASTM D1505	0.952
Melting point	°C	DSC	132
Tensile Strength at Yield	Kg/cm ²	ASTM D638	270
Tensile Strength at Break	Kg/cm ²	ASTM D638	300
Elongation at Break	%	ASTM D638	1,000
Izod Impact Strength	Kg-cm/cm notch	ASTM D256	13
Hardness	Shore A/D	ASTM D2240	-- / 66
ESCR	Hours	ASTM D1693	200

Contact Information:

Formosa Plastics Corporation Polyolefin Div. Sales Dept.

TEL: 886-2-27122211 EXT. 8140 FAX: 886-2-27193260/ 886-2-27178176

ADD.: 4F., No. 201, Tung Hwa N. Road, Songshan Dist., Taipei City 10508, Taiwan (R.O.C.)

E-mail: formosa_pe@fpc.com.tw

雨刷水箱原料



HB5502B 在多模擠出中空吹製設備上具有優異的加工性能，可生產外型複雜並具優異尺寸安定性的液體容器，具有穩定的安定劑配方能夠確保添加較多的回收邊料。

Formolene® PE 產品（台塑美國公司）

台塑美國公司提供多種的聚乙烯樹脂產品，適用車用市場各種板材押出及吹製成型之加工應用。

Formolene® HDPE 設計可達到全球車廠 (OEM) 引擎室各部件嚴苛的規範，同時提供優化的加工及二次組裝製造的特性。

Formolene® HDPE 吹製級產品用於生產大型引擎室內液態容器及空調系統組件等產品具有極佳的熔融強度，同時兼具優異耐環境應力龜裂性 (ESCR) 與保色性等加工特性。

Formolene® HB5502B

產品特性及優點：

HB5502B 是一支熔融指數 0.35 的中空吹製級 HDPE 共聚物，能夠用於汽車引擎室內，主要以吹塑加工方式製作雨刷水箱及引擎冷卻劑之副水箱，並且提供非常良好耐環境應力龜裂性 (ESCR) 及抗汙性特性可延長車用液體使用期限。

加工方式：吹製成型。

產品規格表：

產 品			HDPE	
產 品 型 號			HB5502B	
項 目	單 位	測 試 方 法	平 均 值	
熔融指數	g/10min	ASTM D1238	0.35	
彎曲模量	Mpa	ASTM D790	1,378	
密度	g/cc	ASTM D1505	0.955	
拉力強度	Mpa	ASTM D638	28	
脆性溫度	°C	ASTM D746	<-118	
耐環境應力龜裂性	Condition A. F50@100 % Igepal	Hours	ASTM D1693	45
	Condition A. F50 @ 10% Igepal.	Hours	ASTM D1693	35

聯繫方式：Formosa Plastics Corporation, U.S.A.

公司電話：1-888-372-8723 聯絡人：Simon Hwang

公司地址：9 Peach Tree Hill Rd., Livingston, NJ 07039

E-mail：shwang@fpcusa.com

Raw materials for

Coolant Reservoir & Wiper Fluid Container



Formolene HB5502B offers excellent blow molding processing on multi cavity extrusion blow molding equipment, for complex fluid container shapes, along with excellent dimensional stability. A robust antioxidant package ensures high level usage of regenerated trim and flashing.

Formolene® PE Resins (FPC USA)

FPC USA offers a broad range of polyethylene resins for the transportation market for sheet extrusion and blow molding applications.

Our Formolene HDPE resins are designed to meet the design demands of global automotive OEM under hood specifications, as well as provide for optimized processing and secondary fabrication assembly.

Formolene HDPE blow molding grade resins have excellent melt strength for the production of large under hood fluid containers and air management parts, with excellent ESCR properties and color retention.

Formolene® HB5502B

Product Features and Benefits:

HB 5502B is a 0.35 MFI extrusion blow molding grade HDPE copolymer designed to withstand the environment of automotive under hood applications. Its primary use is for the blow molding of fluid containers for wiper washer fluids and engine cooling media. It provides for excellent ESCR properties and excellent stain resistance with extended life automotive fluids.

Processing Methods: Designed for extrusion and blow molding.

Products Specifications:

Product			HDPE	
Grade			HB5502B	
Properties	Unit	Method	Typical Value	
Melt Flow Index	g/10min	ASTM D1238	0.35	
Flexural Modulus	Mpa	ASTM D790	1,378	
Density	g/cc	ASTM D1505	0.955	
Tensile Strength	Mpa	ASTM D638	28	
Brittleness Temperature	°C	ASTM D746	<-118	
ESCR	Condition A. F50@100 % Igepal	Hours	ASTM D1693	45
	Condition A. F50 @ 10% Igepal	Hours	ASTM D1693	35

Contact Information:

Formosa Plastics Corporation, U.S.A.

TEL: 1-888-372-8723 Contact: Simon Hwang
 ADD.: 9 Peach Tree Hill Rd., Livingston, NJ 07039
 E-mail: shwang@fpcusa.com

汽車水箱支架原料



改性塑膠(工程塑膠)產品(南亞公司): Nylon 66 複材

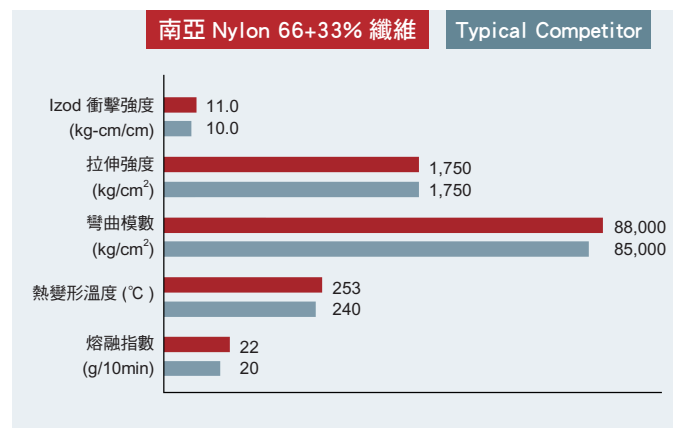
Nylon 66+33% 纖維 規格: 6214GCGBK2

產品特性及優點:

南亞改性塑膠(工程塑膠)產品包含 PBT、PET、NYLON 6、NYLON 66、PC、PP、PPE 等系列產品, 玻纖強化、耐燃等規格種類齊全, 通過 ISO 9001、ISO 14001、TS 16949 認證, 品質穩定, 成型加工性佳, 提供製品優越之機械強度, 高熱變形溫度、尺寸安定性、電器性質等, 並擁有符合環保要求之非鹵素防火材料, 適用於汽車內裝及外裝各種等各種零配件。

加工方式: 射出成型。

南亞 Nylon 66 複材與 Typical Competitor 物性比較:



產品規格表:

種類			Nylon 66 複材
產品型號			6214GCGBK2
特性			高強度、高抗熱變形、耐熱水解
應用			汽車水箱支架
項目	單位	試驗方法	平均值
熔融指數	g/10min	ASTM D1238	22
拉伸強度	kg/cm ²	ASTM D638	1,750
彎曲模數	kg/cm ²	ASTM D790	88,000
Izod 衝擊強度	kg.cm/cm	ASTM D256	11.0
熱變形溫度	°C	ASTM D648	253

聯繫方式: 南亞塑膠工業股份有限公司 塑三部 產銷四組

公司電話: 886-2-27178507、886-2-27122211 轉 5814 公司傳真: 886-2-27198661

公司地址: 10508 台北市松山區敦化北路 201 號後棟三樓

E-mail: epanya@npc.com.tw

Raw materials for Radiator Mounting



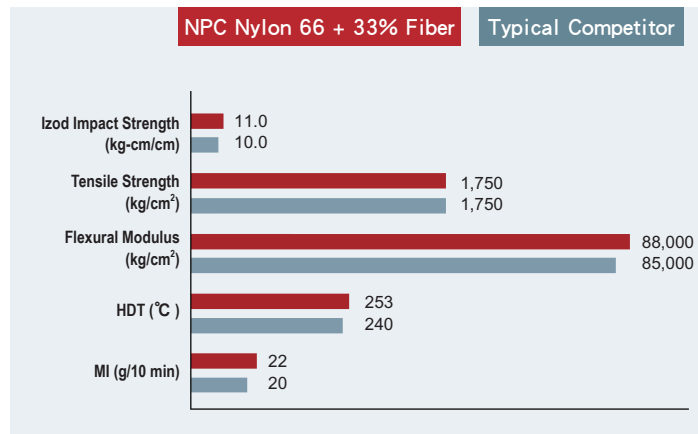
Modified plastics (engineering plastics) (NPC): Nylon 66 composite
Nylon 66 + 33% Fiber Grade: 6214GCGBK2

Product Features and Benefits:

Nan Ya's modified plastics (engineering plastics) are available in PBT, PET, NYLON 6, NYLON 66, PC, PP, PPE, and other materials with a wide range of specifications and properties, including reinforced glass fiber, flame retardant, stable quality, and good moldability, all of which conform to ISO 9001, ISO 14001, and TS 16949 certifications. These materials can help produce products with excellent mechanical strength, high heat distortion temperature, dimensional stability, electrical properties, etc. Environmentally friendly halogen-free flame retardant materials are also available and are suitable for use in car interior/exterior decorations, as well as various parts and accessories.

Processing Methods: Designed for injection molding.

Comparison of NPC Nylon 66 Composite with a Typical Competitor:



Products Specifications:

Type			Nylon 66 Composite
Grade			6214GCGBK2
Characteristics			High tenacity, High heat distortion temperature resistance, Thermal hydrolysis resistance
Applications			Radiator mounting
Properties	Unit	Test Method	Typical Value
Melt Index	g/10min	ASTM D1238	22
Tensile Strength	kg/cm ²	ASTM D638	1,750
Flexural Modulus	kg/cm ²	ASTM D790	88,000
Izod Impact Strength	kg.cm/cm	ASTM D256	11.0
HDT	°C	ASTM D648	253

Contact Information:

Nan Ya Plastics Corporation Plastics 3rd Div. Engineering Plastics Dept.

TEL: 886-2-27178507/ 886-2-27122211 EXT. 5814 FAX: 886-2-27198661

ADD.: 3F., No. 201, Tung Hwa N. Road, Songshan Dist., Taipei City 10508, Taiwan (R.O.C.)

E-mail: epnanya@npc.com.tw

台塑企業**汽車部件** 使用材料

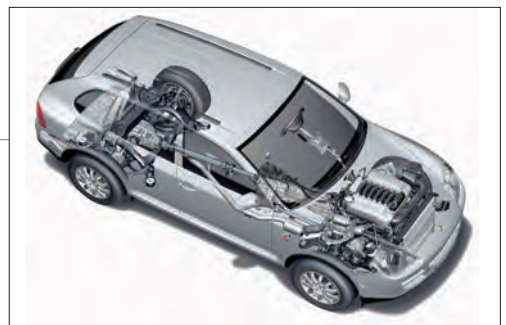
電線用波紋管、電線披覆、芯線皮
**Wire Harness Covers/
Wire Insulation**

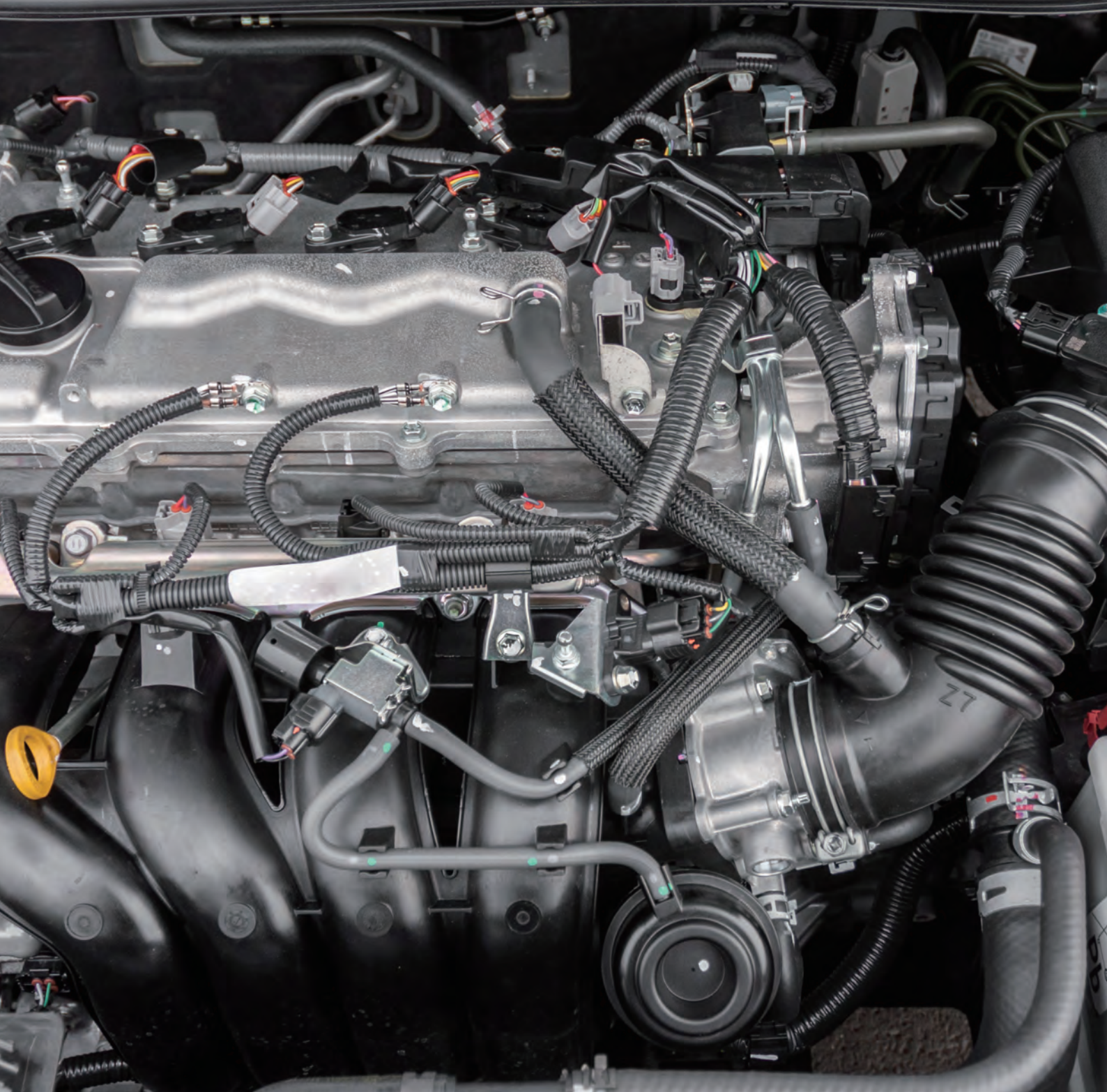




耐溫、優異的絕緣性

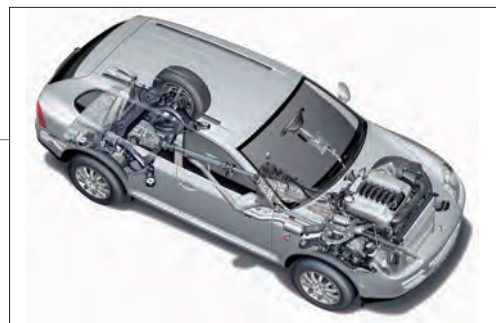
耐高溫、高剛性及良好可塑化特性，絕緣性佳
讓波紋管具備極佳物性。





TEMPERATURE RESISTANCE, OUTSTANDING INSULATION

The excellent high temperature resistance, high rigidity, and good plasticizing properties of materials used in wire harness covers will help generate excellent physical properties.



電線用波紋管、電線披覆原料



PVC 粉產品 (台塑公司)

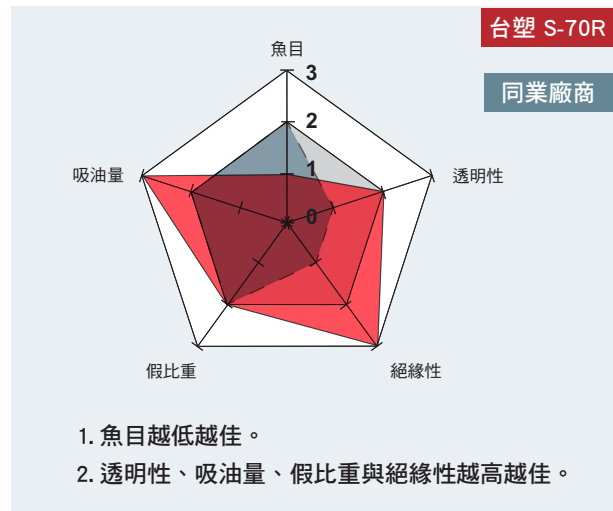
產品特性及優點：

PVC 均一粉用於汽車零件有低成本、加工性佳、具有高吸油量，良好的可塑化能力，優良的絕緣性。

加工方式及應用：

可應用於軟質押出成型加工，加工產品主要為電線電纜。

台塑 PVC S-70R 產品與 Typical Competitor 物性比較：



產品規格表：

種類			均一粉
產品型號			S-70R
項目	單位	測試方法	標準值
平均聚合度	-	JIS K6721	1,250 ± 50
假比重	g/cm ³	JIS K6721	0.47 ± 0.02
吸油量	%	ASTM D3367	28 ± 1.0
揮發份	ppm	JIS K6721	Max. 0.3
VCM 殘留量	ppm	ASTM D3749	Max. 1.0
紅黑渣	PC/100g	FPC Method	Max. 30
魚目	PC/100cm ²	FPC Method	Max. 30

聯繫方式：台灣塑膠工業股份有限公司 塑膠部 營一處

公司電話：886-2-27122211 轉 6094 公司傳真：886-2-27137012

公司地址：10508 台北市松山區敦化北路 201 號前棟四樓

E-mail：chrishuang@fpc.com.tw

Raw materials for

Wire Harness Covers & Wire Insulation



PVC Resins (FPC)

Product Features and Benefits:

The suspension PVC used in automobile parts features such benefits as being low cost and having good processing property, excellent plasticizer absorption ability, excellent electrical properties, etc.

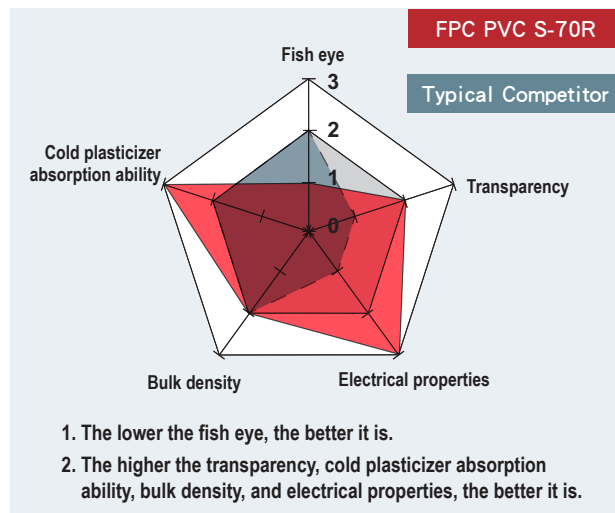
Processing Methods:

Designed for soft extrusion molding.

Applications:

Wires and cables.

Comparison of FPC PVC S-70R with a Typical Competitor:



Products Specifications:

Type			Suspension PVC
Grade			S-70R
Properties	Unit	Test Method	Typical Value
Polymerization Degree	-	JIS K6721	1,250 ± 50
Bulk Density	g/cm ³	JIS K6721	0.47 ± 0.02
Cold Plasticizer Absorption Ability	%	ASTM D3367	28 ± 1.0
Volatile Matter	ppm	JIS K6721	Max. 0.3
Residual VCM	ppm	ASTM D3749	Max. 1.0
Foreign Matter	PC/100g	FPC Method	Max. 30
Fish Eye	PC/100cm ²	FPC Method	Max. 30

Contact Information:

Formosa Plastics Corporation Plastics Div. Sales Dept.

TEL: 886-2-27122211 EXT. 6094 FAX: 886-2-27137012

ADD.: 4F., No. 201, Tung Hwa N. Road, Songshan Dist., Taipei City 10508, Taiwan (R.O.C.)

E-mail: chrishuang@fpc.com.tw

電線用波紋管、電線披覆原料



Formolon® 680 PVC 粉產品 (台塑美國公司)

均一粉 / 一般級樹脂

產品特性及優點：

F680 對各種分子量的可塑劑皆具有良好的吸收速率，特別適用於混煉加工。

此外，F680 亦能提供：

- * 優良的電氣特性，絕緣性佳
- * 紅黑渣少
- * 魚目少
- * 優良熱穩定性
- * 最終製品具有極佳的物性
- * 批次間一致性高

應用方式：

軟質壓延、押出、醫療製品、吹膜及電線電纜等。

產品規格表：

種類			均一粉
產品型號			F680
項目	單位	測試方法	平均值
相對粘度	-	-	2.37
固有粘度	-	ASTM D5225	1.02
K 值	-	-	70
揮發份	%	ASTM D6980	0.20
假比重	lbs/ft ³	ASTM D1895	32
	g/cc		0.51
粒徑分析		Malvern	
通過 40 Mesh %			99.9
通過 200 Mesh %			4.0
殘留 VCM	ppm	GC Head Space Method	<1.0
晶點	-	GP Gel Method	20
紅黑渣	-	OCS per 100g	10

聯繫方式：Formosa Plastics Corporation, U.S.A.

公司電話：1-888-372-8723 聯絡人：Simon Hwang

公司地址：9 Peach Tree Hill Rd. Livingston, NJ 07039

E-mail：shwang@fpcusa.com

Raw materials for

Wire Harness Covers & Wire Insulation



Formolon® 680 PVC Resins (FPC USA)

Homopolymer/General Purpose Grade Resins

Product Features and Benefits:

F680 is especially suited for processing from powder blends due to its ability to rapidly absorb plasticizers regardless of molecular weight.

In addition, this product offers:

- *Excellent Electrical Properties.
- *Low Contamination .
- *Low Gel Content.
- *Excellent Heat Stability .
- *High Finished Product Physical Properties.
- *Lot To Lot Uniformity.

Suggested Applications:

Flexible Calendering, Extrusion, Medical, Blown Film, Wire and Cable.

Products Specifications:

Type			Homopolymer
Grade			F680
Properties	Unit	Test Method	Typical Value
Relative Viscosity	-	-	2.37
Inherent Viscosity	-	ASTM D5225	1.02
K-value	-	-	70
Volatiles	%	ASTM D6980	0.20
Bulk Density	lbs/ft3	ASTM D1895	32
	g/cc		0.51
Sieve Analysis		Malvern	
thru 40 Mesh %			99.9
thru 200 Mesh %			4.0
Residual VCM	ppm	GC Head Space Method	<1.0
Gel Count	-	GP Gel Method	20
Contamination Count	-	OCS per 100g	10

Contact Information:

Formosa Plastics Corporation, U.S.A.

TEL: 1-888-372-8723 Contact: Simon Hwang
 ADD.: 9 Peach Tree Hill Rd., Livingston, NJ 07039
 E-mail: shwang@fpcusa.com

電線用波紋管、芯線皮原料



PP 產品 (台塑公司)

3010/3015

產品特性及優點：

台塑 PP 產品用於汽車零件有輕量化、低成本、加工性佳優點，並可依其特性進行改質（如：添加滑石粉、玻纖等），以產製各式化汽車零組件。

結合 3010 與 3015 特性，具有低 VOC、高剛性、高衝擊強度、耐溫性佳。

加工方式：押出成型。

產品規格表：

種類		耐衝擊共聚物	
產品型號		3010	3015
項目	單位	平均值	
熔融指數	g/10min	1.3	2
降伏強度	kg/cm ²	250	280
斷裂點伸長率	%	>500	>450
剛性係數	kg/cm ²	12,000	11,200
IZOD 耐衝擊強度	kg.cm/cm	常溫 (23°C)	55
		低溫 (-20°C)	13
熱變形溫度	°C	110	100

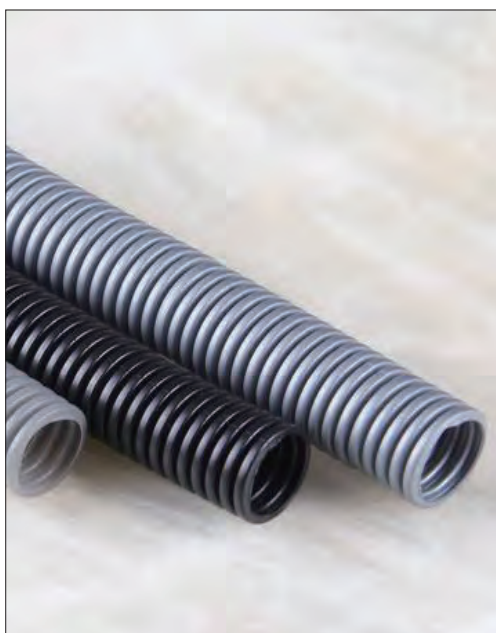
聯繫方式：台灣塑膠工業股份有限公司 聚丙烯部 營業處

公司電話：886-2-27122211 轉 6169 公司傳真：886-2-27181230

公司地址：10508 台北市松山區敦化北路 201 號前棟八樓

E-mail：eric0602@fpc.com.tw、tbcharles@fpc.com.tw

Raw materials for Wire Harness Covers



PP Resins (FPC)

3010/3015

Product Features and Benefits:

Using FPC's PP raw materials in auto parts provides lightweight, low cost, and good workability characteristics and can be modified according to their properties (such as adding talc powder, glass fiber, etc.) to produce a variety of auto parts and components.

Both 3010 and 3015 feature low VOC, high rigidity, high impact strength, and excellent temperature resistance features.

Processing Methods: Designed for extrusion molding.

Products Specifications:

Type		Impact Copolymer		
Grade		3010	3015	
Properties	Unit	Typical Value		
Melt Index	g/10min	1.3	2	
Tensile Strength at Yield	kg/cm ²	250	280	
Tensile Elongation at Break	%	>500	>450	
Flexural Modulus	kg/cm ²	12,000	11,200	
Izod Impact Strength	kg-cm/cm	23°C	55	50
		-20°C	13	13
HDT	°C	110	100	

Contact Information:

Formosa Plastics Corporation Polypropylene Div. Sales Dept.

TEL: 886-2-27122211 EXT. 6169 FAX: 886-2-27181230

ADD.: 8F., No. 201, Tung Hwa N. Road, Songshan Dist., Taipei City 10508, Taiwan (R.O.C.)

E-mail: eric0602@fpc.com.tw / tbcharles@fpc.com.tw

電線用波紋管原料



PP 產品 (台化公司)

產品特性及優點：

台化發揮 Chisso Know-how 氣相製程，開發出多款高附加價值 Impact Copolymer，供應汽車 Compound 行業使用。

A. 台化 PP 已通過認證資料：

(1)ISO 9001 ,14001 (2)OHSAS 18001 (3) 環保證明。

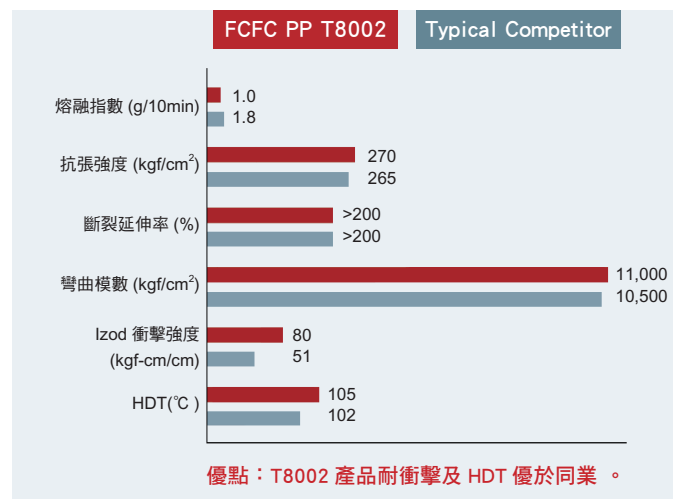
B. T8002 取得認證資料：

(1)FDA Compliance (2)UL 94 HB (3)RoHS

(4)REACH SVHC (5)PAHS

加工方式：押製成型。

台化 PP T8002 產品與 Typical Competitor 物性比較：



產品規格表：

種類			耐衝擊共聚物	
產品型號			T8002	
特性			衝擊性優、低 MI	
應用			複合材、電線用波紋管	
項目	單位	試驗方法	平均值	
熔融指數	g/10min	ASTM D1238	1.0	
抗張強度	kgf/cm ²	ASTM D638	270	
斷裂延伸率	%	ASTM D638	> 200	
彎曲模數	kgf/cm ²	ASTM D790A	11,000	
硬度	R-Scale	ASTM D785	80	
Izod 衝擊強度	kgf-cm/cm	常溫 (23°C)	ASTM D256	80
熱變形溫度	°C	ASTM D648	105	

聯繫方式：台灣化學纖維股份有限公司 塑膠部 營業二處

公司電話：886-2-27178355 公司傳真：886-2-27131649

公司地址：10508 台北市松山區敦化北路 201 號前棟二樓

E-mail：anderson.plastics@fcfc.com.tw

Raw materials for Wire Harness Covers



PP Resins (FCFC)

Product Features and Benefits:

FCFC has exhibited the technical know-how of the Chisso gas-phase process to develop a number of high value-added impact copolymers into compound materials and supply them to the auto industry.

A. FCFC's PP has received :

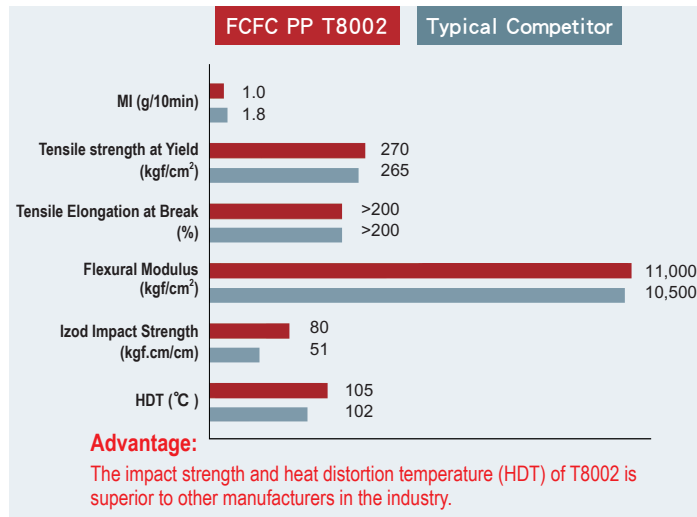
- (1) ISO 9001 & 14001 (2) OHSAS 18001
(3) environmental protection certification.

B. T8002 has obtained certification from:

- (1) FDA (2) UL 94 HB (3) RoHS (4) REACH SVHC (5) PAHS.

Processing Methods: Designed for extrusion molding.

Comparison of FCFC PP T8002 with a Typical Competitor:



Products Specifications:

Type			Impact Copolymer
Grade			T8002
Characteristics			Excellent impact strength, low melt flow index (MI)
Applications			Composite materials, Wire Corrugated Pipe
Properties	Unit	Test Method	Typical Value
Melt Index	g/10min	ASTM D1238	1.0
Tensile Strength at Yield	kgf/cm ²	ASTM D638	270
Tensile Elongation at Break	%	ASTM D638	> 200
Flexural Modulus	kgf/cm ²	ASTM D790A	11,000
Hardness	R-Scale	ASTM D785	80
Izod Impact Strength	kgf-cm/cm	23°C ASTM D256	80
HDT	°C	ASTM D648	105

Contact Information:

Formosa Chemicals & Fibre Corporation Plastics Div. 2nd Sales Dept.

TEL: 886-2-27178355 FAX: 886-2-27131649

ADD.: 2F., No. 201, Tung Hwa N. Road, Songshan Dist., Taipei City 10508, Taiwan (R.O.C.)

E-mail: anderson.plastics@fcfc.com.tw

芯線皮原料



Formolene 6502A 同時具有健全的耐衝擊及剛性的特性加工性能，在室溫下並不會受外力影響而斷裂。

Formolene® PP 產品（台塑美國公司）

台塑美國公司提供多種的聚丙烯樹脂產品，適用於車用市場各部件加工應用。

Formolene® PP 設計可達到全球車廠 (OEM) 引擎室各部件嚴苛的規範，同時提供優化的加工及二次組裝製造的特性。Formolene® PP 具有多種的車用級規格樹脂，適用於低熔指押出成型與高熔指射出成型及複合材混煉等加工方式，提供耐衝擊性與剛性平衡的特點，且能使產品輕量化，提升生產效率的優勢以降低加工成本。

Formolene® 6502A

產品特性及優點：

6502A 是一個低熔融指數，高耐衝擊的押出吹製級 PP 產品，主要用於車用市場。

低熔融指數特性適用於加工方式為押出成型的車用零件，例如：電器電線及導水管等，且針對小型零件押出吹製成板型能提供優良熔融強度。

6502A 具有與色母、填料及阻燃劑混合分散均勻度佳的特性，用於要求阻燃及減少廢氣排放，可達到汽車工業零件加工品的電氣規範標準。

認證：FCA. MSDB-500. CPN 4809.

加工方式：押出及吹製成型。

產品規格表：

產品型號			6502A
項目	單位	試驗方法	平均值
熔融指數	g/10min	ASTM D1238	1.2
彎曲模數	MPa @ 1% secant	ASTM D790	1,172
抗張強度	MPa	ASTM D638	26
Izod 衝擊強度	@ RT KJ/m ²	ASTM D256	NB
	@ -30 Dec C KJ/m ²		na
熱變形溫度	Dec C @ 0.45MPa	ASTM D648	97

聯繫方式：Formosa Plastics Corporation, U.S.A.

公司電話：1-888-372-8723 聯絡人：Simon Hwang

公司地址：9 Peach Tree Hill Rd., Livingston, NJ 07039

E-mail：shwang@fpcusa.com

Raw materials for Wire Harness Covers



Formolene 6502A exhibits a robust balance of impact and stiffness performance, exhibiting a no break izod impact condition at room temperature.

Formolene® PP Resins (FPC USA)

FPC USA offers a broad range of polypropylene resins for the transportation market. Our Formolene automotive resins are designed to meet the design demands of global automotive OEM specifications, as well as provide for optimized processing and secondary fabrication assembly.

Formolene polypropylene automotive resins are available for low MFR extrusion processes and high MFR injection molding and compounding processes, offering a broad range of impact stiffness balanced properties, in line with cost reduction efforts in terms of part lightweighting and increased production rates.

Formolene® 6502A

Product Features and Benefits:

6502A is low MFR and extrusion blow molding grade high impact polypropylene copolymer designed for demanding applications in the transportation market.

Its low MFR makes it suitable for the profile extrusion of automotive parts such as electrical wire harness looms and conduits in addition to providing excellent melt strength for small part extrusion blow molding** and sheet extrusion.

Compatible with color master batches, fillers, and flame retardants typically required by the transportation industry to meet flammability and smoke reduction standards for electrical specifications.

**** Approved by FCA. MSDB-500. CPN 4809.**

Processing Methods:

Designed for profile & sheet extrusion and extrusion blow molding.

Products Specifications:

Grade			6502A
Properties	Unit	Test Method	Typical Value
MFR	g/10min	ASTM D1238	1.2
Flexural Modulus	MPa @ 1% secant	ASTM D790	1,172
Tensile Strength	MPa	ASTM D638	26
Notched Izod Impact Strength	@ RT KJ/m ²	ASTM D256	NB
	@ -30 Dec C KJ/m ²		na
HDT	Dec C @ 0.45MPa	ASTM D648	97

Contact Information:

Formosa Plastics Corporation, U.S.A.

TEL: 1-888-372-8723 Contact: Simon Hwang
 ADD.: 9 Peach Tree Hill Rd., Livingston, NJ 07039
 E-mail: shwang@fpcusa.com

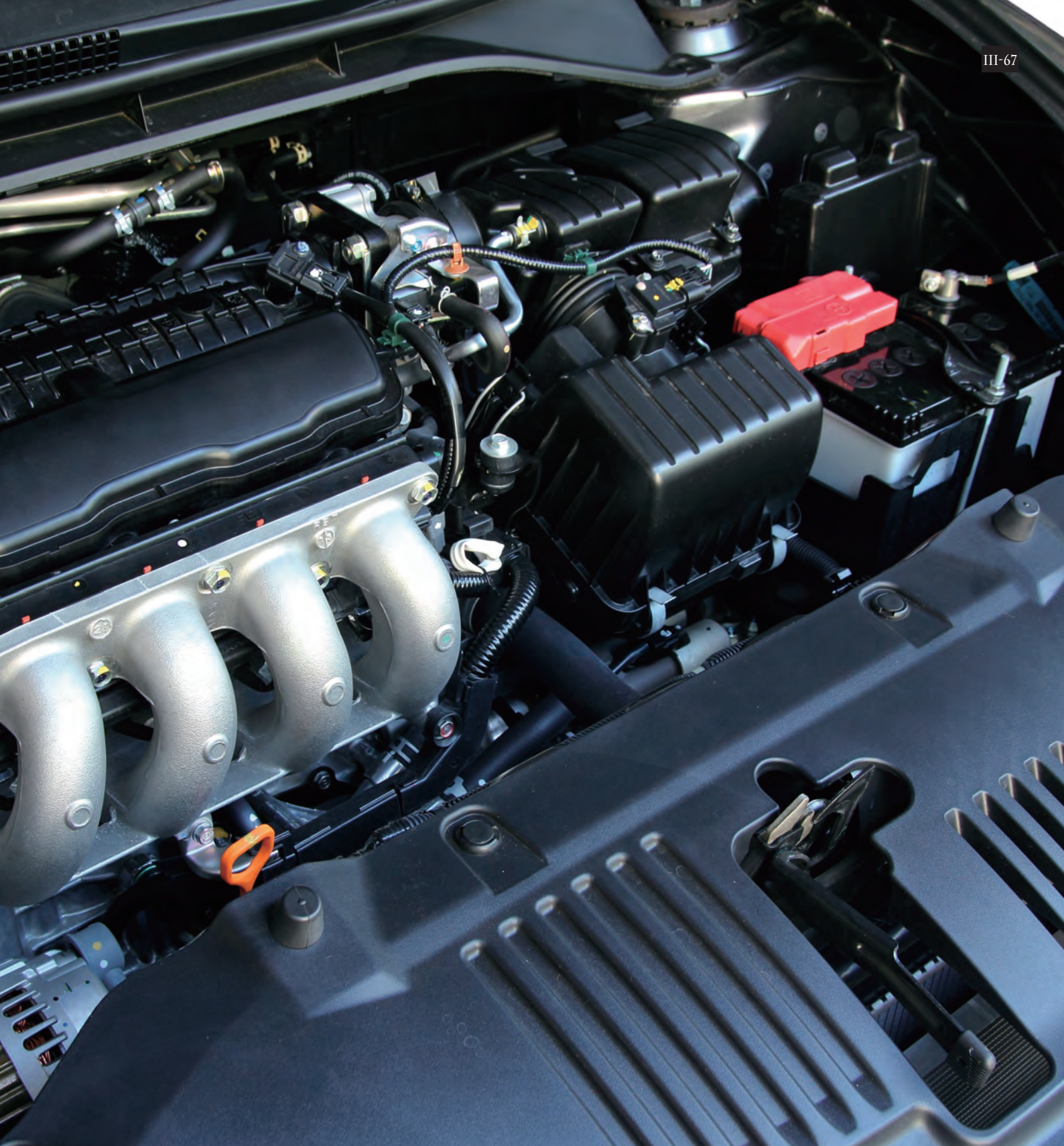
台塑企業**汽車部件** 使用材料

啟動電池、電池外殼

Starter Battery/

Battery Casing & Housing

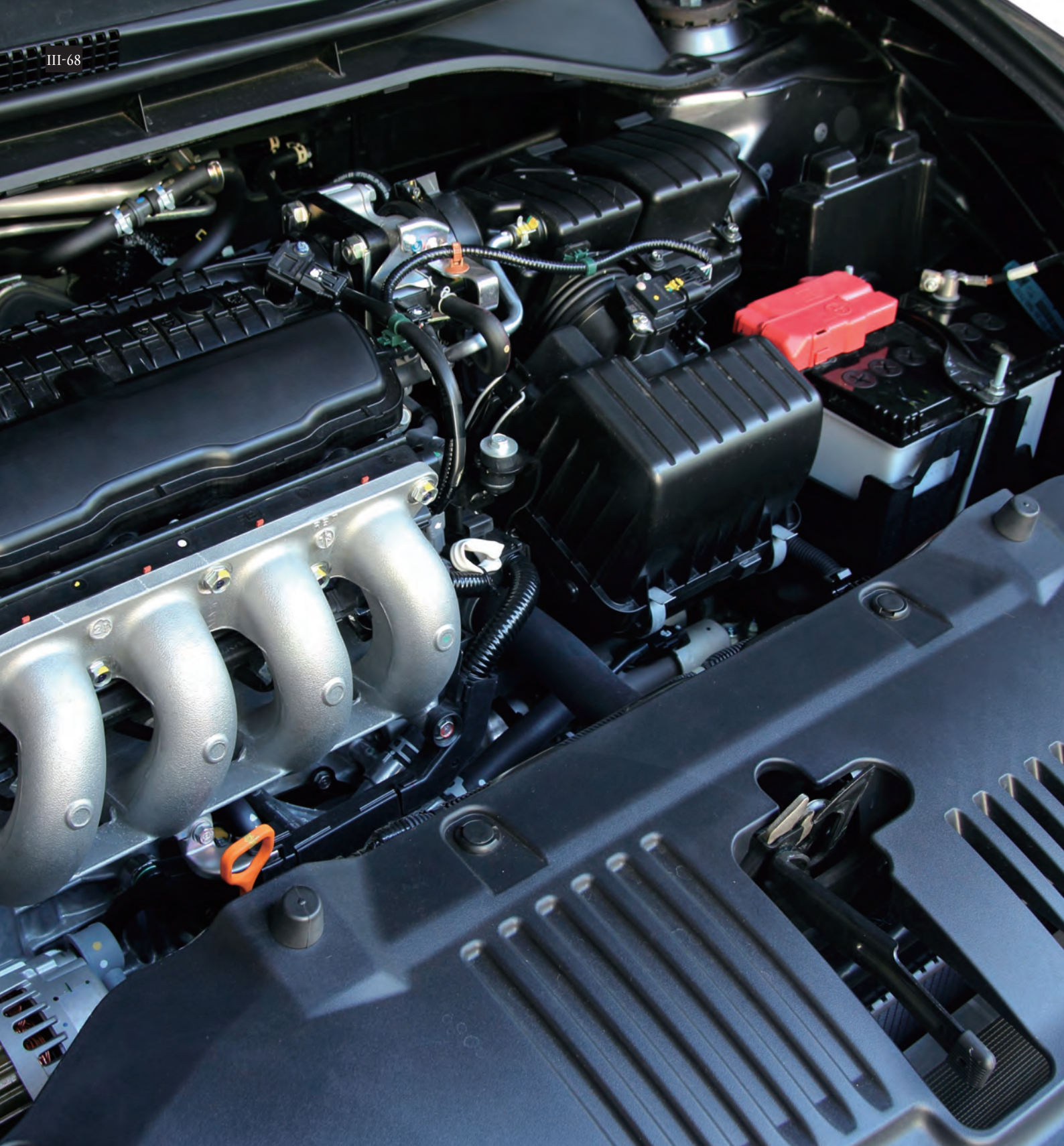




長效、可靠、安全、節能省油、智慧

智慧 IC 迴路，具有省油與防止過度放電的保護作用，斷電及防盜的安全機制，兼具節能、環保的優勢，成為您車輛最佳的綠色管家。





SUSTAINABILITY, RELIABLE, SAFE, ENERGY SAVING AND SMART

Featuring the smart IC circuit, fuel saving, over-discharge protection, smart power management and anti-theft security mechanisms, these batteries combine the green energy and environmental protection to become the best solution for the future power.



電池外殼原料



PP 產品 (台塑公司)

3080/3084/3090

產品特性及優點：

台塑 PP 產品用於汽車零件有輕量化、低成本、加工性佳優點，並可依其特性進行改質（如：添加滑石粉、玻纖等），以產製各式化汽車零組件。

台塑 PP 產品 3080、3084 與 3090，具有低 VOC、高剛性、衝擊強度優與耐酸鹼等特性，其中 3084 具更高之耐溫性，3080 獲得江森自控認證，符合歐規之全球車系的熱老化測試 150°C、400 小時規範。

加工方式：射出成型。

產品規格表：

種類		耐衝擊共聚物				
產品型號		3080	3084	3090	對抗品	
項目	單位	平均值				
熔融指數	g/10min	8.5	8.5	8.5	9	
降伏強度	kg/cm ²	280	290	280	230	
剛性係數	kg/cm ²	10,000	14,000	11,500	11,000	
Izod 耐衝擊強度	kg-cm/cm	常溫 (23°C)	10	10	40	NB
		低溫 (-20°C)	4.5	4.5	8.0	7.4
熱變形溫度	°C	105	130	110	110	

聯繫方式：台灣塑膠工業股份有限公司 聚丙烯部 營業處

公司電話：886-2-27122211 轉 6169 公司傳真：886-2-27181230

公司地址：10508 台北市松山區敦化北路 201 號前棟八樓

E-mail：eric0602@fpc.com.tw、tbcharles@fpc.com.tw

Raw materials for Battery Casing & Housing



PP Resins (FPC)

3080/3084/3090

Product Features and Benefits:

Using FPC's PP raw materials in auto parts provides lightweight, low cost, and good workability characteristics and can be modified according to their properties (such as adding talc powder, glass fiber, etc.) to produce a variety of auto parts and components.

FPC's PP raw materials 3080, 3084, and 3090 feature low VOC, high rigidity, excellent impact strength, acid/alkali resistance, and other desirable properties. Of these materials, the temperature resistance property of 3084 is considerably higher than other competitors. Yungsox 3080 has passed the long-term heat stability test (150°C / 400hrs) for Johnson Controls battery case.

Processing Methods: Designed for injection molding.

Products Specifications:

Type		Impact Copolymer				
Grade		3080	3084	3090	Competitor	
Properties	Unit	Typical Value				
Melt Index	g/10min	8.5	8.5	8.5	9	
Tensile Strength at Yield	kg/cm ²	280	290	280	230	
Flexural Modulus	kg/cm ²	10,000	14,000	11,500	11,000	
Izod impact Strength	kg-cm/cm	23°C	10	10	40	NB
		-20°C	4.5	4.5	8.0	7.4
HDT	°C	105	130	110	110	

Contact Information:

Formosa Plastics Corporation Polypropylene Div. Sales Dept.

TEL: 886-2-27122211 EXT. 6169 FAX: 886-2-27181230

ADD.: 8F., No. 201, Tung Hwa N. Road, Songshan Dist., Taipei City 10508, Taiwan (R.O.C.)

E-mail: eric0602@fpc.com.tw / tbcharles@fpc.com.tw

電池外殼原料



PP 產品 (台化公司)

產品特性及優點：

台化發揮 Chisso Know-how 氣相製程，開發出多款高附加價值 Impact Copolymer，供應汽車 Compound 行業使用。

K8009 產品流動性佳，具高耐衝及耐酸鹼等特性。

台化發揮 Chisso Know-how 氣相製程，開發出多款高傳統 Impact Copolymer，供應汽車 Compound 行業使用。

A. 台化 PP 已通過認證資料：

(1)ISO 9001 ,14001 (2)OHSAS 18001 (3) 環保證明。

B. K8009 取得認證資料：

(1)FDA Compliance (2)UL 94 HB (3)RoHS

(4)REACH SVHC (5)PAHS。

加工方式：射出注塑成型。

產品規格表：

種類		耐衝擊共聚物	
產品型號		K8009	
特性		高耐衝擊、耐酸鹼	
應用		汽車電池外殼	
項目	單位	試驗方法	平均值
熔融指數	g/10min	ASTM D1238	9
抗張強度	kgf/cm ²	ASTM D638	230
斷裂延伸率	%	ASTM D638	> 200
彎曲模數	kgf/cm ²	ASTM D790A	11,000
硬度	R-Scale	ASTM D785	80
Izod 衝擊強度	kgf-cm/cm 常溫 (23°C)	ASTM D256	NB >45
熱變形溫度	°C	ASTM D648	110

聯繫方式：台灣化學纖維股份有限公司 塑膠部 營業二處

公司電話：886-2-27178355 公司傳真：886-2-27131649

公司地址：10508 台北市松山區敦化北路 201 號前棟二樓

E-mail：anderson.plastics@fcfc.com.tw

Raw materials for Battery Casing & Housing



PP Resins (FCFC)

Product Features and Benefits:

FCFC has exhibited the technical know-how of the Chisso gas-phase process to develop a number of high value-added impact copolymers into compound materials and supply them to the auto industry. K8009 features the properties of good fluidity, high impact strength, acid/alkali resistance, etc.

A. FCFC's PP has received:

- (1) ISO 9001 & 14001 (2) OHSAS 18001
- (3) environmental protection certification.

B. K8009 has obtained the certification of:

- (1) FDA (2) UL 94 HB (3) RoHS (4) REACH SVHC (5) PAHS.

Processing Methods: Designed for injection molding.

Products Specifications:

Type			Impact Copolymer
Grade			K8009
Characteristics			High impact strength, Acid/alkali resistance
Applications			Battery Casing & Housing
Properties	Unit	Test Method	Typical Value
Melt Index	g/10min	ASTM D1238	9
Tensile Strength at Yield	kgf/cm ²	ASTM D638	230
Tensile Elongation at Break	%	ASTM D638	> 200
Flexural Modulus	kgf/cm ²	ASTM D790A	11,000
Hardness	R-Scale	ASTM D785	80
Izod Impact Strength	kgf-cm/cm	23°C ASTM D256	NB > 45
HDT	°C	ASTM D648	110

Contact Information:

Formosa Chemicals & Fibre Corporation Plastics Div. 2nd Sales Dept.

TEL: 886-2-27178355 FAX: 886-2-27131649

ADD.: 2F., No. 201, Tung Hwa N. Road, Songshan Dist., Taipei City 10508, Taiwan (R.O.C.)

E-mail: anderson.plastics@fcdc.com.tw

電池外殼原料



Formolene 2510A 同時具有耐衝擊及剛性均衡的特性，良好的加工性能，生產電池外殼時，熔接穩定性優異，熔接強度佳。

Formolene® PP 產品（台塑美國公司）

台塑美國公司提供多種的聚丙烯樹脂產品，適用於車用市場各部件加工應用。

Formolene® PP 設計可達到全球車廠 (OEM) 引擎室各部件嚴苛的規範，同時提供優化的加工及二次組裝製造的特性。Formolene® PP 具有多種的車用級規格樹脂，適用於低熔指押出成型與高熔指射出成型及複合材混煉等加工方式，提供耐衝擊性與剛性平衡的特點，且能使產品輕量化，提升生產效率的優勢以降低加工成本。

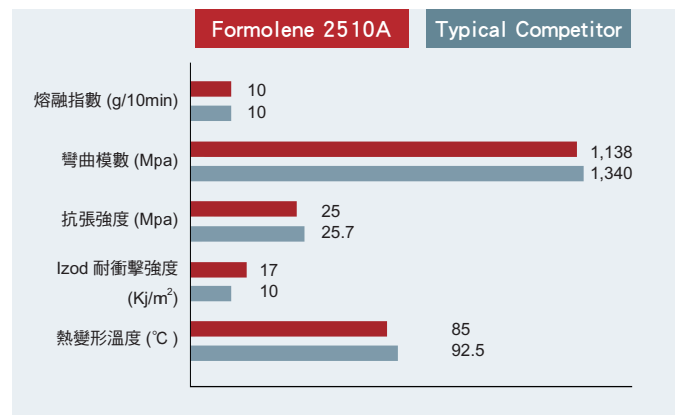
Formolene® 2510A

產品特性及優點：

2510A 是一個中熔指耐衝擊射出級 PP 產品，熔融指數值為 10，保有優異的耐衝擊強度與剛性的平衡性，可應用於汽車工業，如電池外殼箱體、車頂及相關配件，由於本規格耐衝擊性的特性對於高、低溫環境變化均能夠保有一定的物理特性，穩定性佳，適用於汽車引擎室相關零件的應用。

加工方式：射出成型。

Formolene 2510A 產品與 Typical Competitor 物性比較：



產品規格表：

產品型號			2510A
項目	單位	試驗方法	平均值
熔融指數	g/10min	ASTM D1238	10
彎曲模數	MPa @ 1% secant	ASTM D790	1,138
抗張強度	MPa	ASTM D638	25
Izod 衝擊強度	@ RT Kj/m ²	ASTM D256	17
	@ -30 Dec C Kj/m ²		na
熱變形溫度	Dec C @ 0.45MPa	ASTM D648	85

聯繫方式：Formosa Plastics Corporation, U.S.A.

公司電話：1-888-372-8723 聯絡人：Simon Hwang

公司地址：9 Peach Tree Hill Rd., Livingston, NJ 07039

E-mail：shwang@fpcusa.com

Raw materials for Battery Casing & Housing



Formolene 2510A offers a robust balance of impact and stiffness properties offering excellent processing, and part dimension stability for battery case assembly using ultrasonic welding equipment.

Formolene® PP resins (FPC USA)

FPC USA offers a broad range of polypropylene resins for the transportation market. Our Formolene® automotive resins are designed to meet the design demands of global automotive OEM specifications, as well as provide for optimized processing and secondary fabrication assembly. Formolene® polypropylene automotive resins are available for low MFR extrusion processes and high MFR injection molding and compounding processes, offering a broad range of impact stiffness balanced properties, in line with cost reduction efforts in terms of part lightweighting and increased production rates.

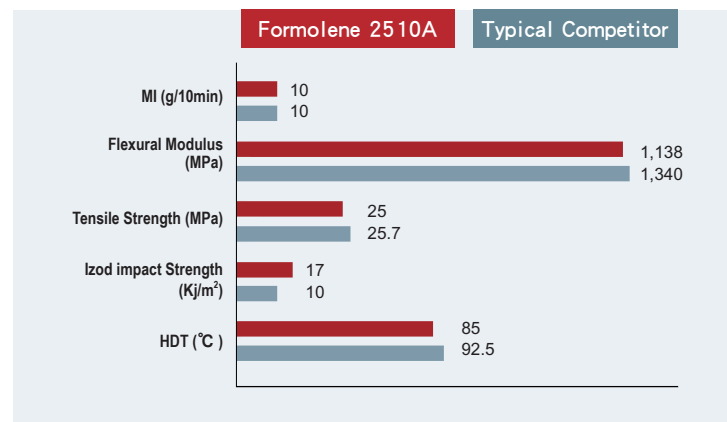
Formolene® 2510A

Product Features and Benefits:

2510A is a 10 MFR injection molding grade medium impact polypropylene copolymer designed for the transportation industry. Its primary use is for the molding of battery cases, tops, and accessories. For under hood automotive applications, the preservation of physical properties at both elevated and low temperatures is a key attribute of this robust impact copolymer.

Processing Methods: Designed for injection molding.

Comparison of FPC's Formolene 2510A with a Typical Competitor:



Products Specifications:

Grade			2510A
Properties	Unit	Test Method	Typical Value
Melt Index	g/10min	ASTM D1238	10
Flexural Modulus	MPa @ 1% secant	ASTM D790	1,138
Tensile Strength	MPa	ASTM D638	25
Notched Izod Impact	@ RT Kj/m ²	ASTM D256	17
	@ -30 Dec C Kj/m ²		na
HDT	Dec C @ 0.45MPa	ASTM D648	85

Contact Information:

Formosa Plastics Corporation, U.S.A.

TEL: 1-888-372-8723 Contact: Simon Hwang
 ADD.: 9 Peach Tree Hill Rd., Livingston, NJ 07039
 E-mail: shwang@fpcusa.com

啟動電池



台塑鋰鐵智慧型啟動電池產品

『台塑鋰鐵智慧型啟動電池』乃結合同塑集團 8 個事業部門公司之材料與技術，成功研發高品質高性能之產品，具有省油、防止過充放電、防止電線走火、符合有害物質管制 RoHS 規範、高倍率放電、輸出穩定、二次啟動供電（忘記關燈也不會無法發動）、壽命為鉛酸電池 5 倍等強大優勢。透過電池結合藍牙功能，可使用 APP 軟體與手機、平板電腦結合，以利監控與分析電池各種資訊。此應用可謂全球首創，顯示台塑鋰鐵電池不只是電池，而是『環保』、『潮流』、『科技』與『人性』的代名詞。

榮獲 2014 年、2015 年台灣經濟部「台灣精品獎」與 2015 年「國家產業創新獎」



產品特性及優點：

『台塑鋰鐵智慧型啟動電池』已通過第三公證 Intertek 單位嚴謹驗證。證明台塑電池是高可靠、高安全，高品質符合國際標準之產品。同時，也是第一個通過亞洲地區國際級安全規範認證的鋰鐵啟動電池。

取得多國認證：包括：

UN 38.3 聯合國航空運輸規範。

CE 歐盟安全要求。

PSE 日本安全要求。

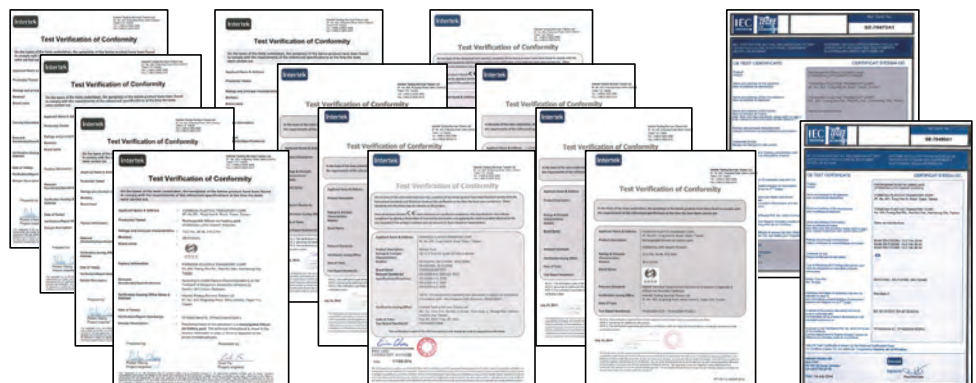
RoHS 歐盟危害性物質限制指令。

CNS 台灣安全要求。

EMC (電磁兼容性) — 全球電子產品防干擾認證。



取得多國認證：



Starter Battery



Formosa LFPO Smart Power Product

The Formosa LFPO Smart Power is combined with materials and technologies from eight of Formosa Plastics Group's business divisions, the Formosa LFPO Smart Power boasts the following characteristics: fuel-efficient, prevents excessive charge-discharge, prevents electric wire from discharging, complies with RoHS standards related to hazardous substance control, high-rate discharge, stable output, re-start supply (starts in case you forget to turn off the lights), and a service life five times longer than lead-acid batteries. By connecting it to Bluetooth, the battery can be linked to mobile phones and tablet PCs via APP software, for the convenience of monitoring and analyzing all kinds of battery data. This application can be described as a global pioneer, the Formosa LFPO Smart Power battery, but a symbol of environmental responsibility, modern trends, science, and technology.

Won "Taiwan Excellence" from Taiwan's Ministry of Economics and the National Industrial Innovation Awards in 2015



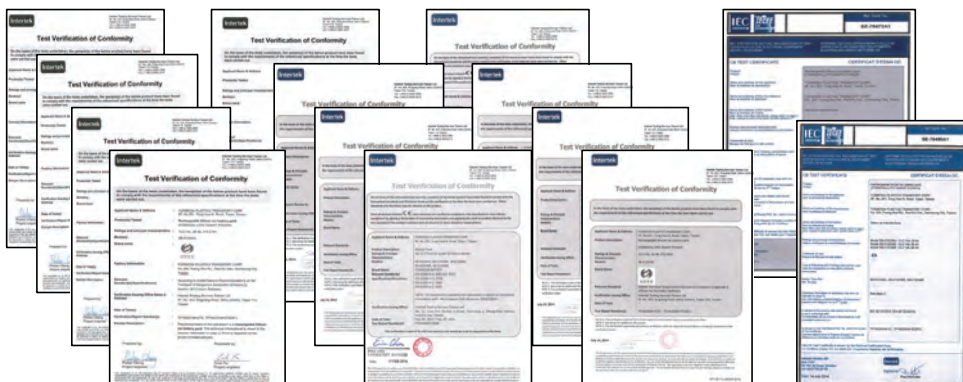
Product Features and Benefits:

The Formosa LFPO Smart Power battery has been by Intertek. The results prove that the battery is a product with high stability, high safety, and high quality that complies with international standards. Furthermore, this is the first Li-Fe battery that has passed authentication with regard to international safety standards within the Asian region. These standards include:

- UN38.3 United Nations Air Transportation Standard.
- CE European Union Safety Requirements.
- PSE Japan Safety Requirements.
- RoHS Limit Instructions to Hazardous Substance in EU.
- CNS Taiwan Safety Requirements.
- EMC (Electromagnetic Compatibility) - Anti-interference.



Certifications Obtained from Various Countries:



強大功能領先業界！

二次啟動 (Re-Start)

啓動瞬間電壓降控制迴路

智慧型保護迴路 (專利)

防盜 (專利)

多重保護迴路設計 (專利)

睡眠省電裝置

過低電壓警報裝置

可維修

可檢查電池狀況

通訊查詢

瞬間大功率輸出

防爆炸燃燒

可回收

RoHS compliant

RoHS

多項專利設計，達到”6S”完美境界！

<p>長效 Sustainability</p>	<p>安全 Safety</p>	<p>保全 Security</p>	<p>人性 Satisfied</p>	<p>節能 Save Energy</p>	<p>智慧 Smart</p>
<p>使用壽命長！ 三年保固！</p>	<p>多重保護！ 短路保護！</p>	<p>斷電防盜功能！</p>	<p>可維修！ 防呆設計！ 可用鉛酸充電器！ 備用電源設計！ 可廣泛使用！ 免保養！</p>	<p>增強輸出電力！ 改善火星塞 跳火電壓！</p>	<p>智慧 IC 迴路！ 異常預警功能！</p>

發明專利：



Leading the Industry with Its Powerful Functions!

RESTART
Re-start

ENGINE START STOP
Start instant voltage drop control loop

Smart protection loop (Patent)

Prevention of burglary (Patent)

Multiple protection (Patent)

Power-saving device for sleeping device for sleeping

Warning device for excessively low voltage

Anti-explosion and burning

Recyclable

Maintainable

Check battery state

Communication inquiry

Instant high-power output

RoHS compliant
RoHS

Multiple Patent Designs to Achieve the Perfect Realm of "6S"!

長效
Sustainability

Long service life!
Three-year guarantee!

安全
Safety

Multiple protections!
Short-circuit protection!

保全
Security

Prevention of burglary in case of power failure!

人性
Satisfied

Maintainable, fool-proof design!
Can use plumbic acid charger!
Adopts power design!
Can be widely used!
Maintenance-free!

節能
Save Energy

Enhance output power!
Improve ignition voltage in spark plugs!

智慧
Smart

Smart IC loop!
Pre-alarm function in case of abnormal condition!

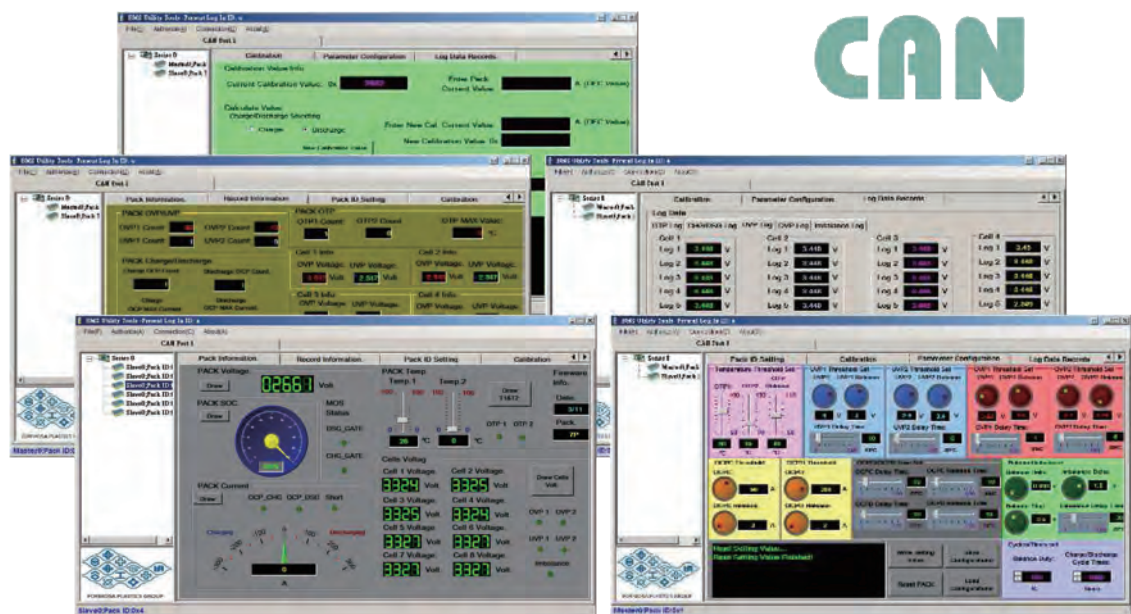
Invention Patents :



24V 啟動電池與儲能電池產品：

- 具 CANbus 通訊功能，相容 CAN2.0B。
- 可與其它控制器、車載電腦和個人電腦通訊。
- 可即時監視電池 BMS 內部資訊，歷史訊息。
- 可調整電池參數。
- 電池可串聯與並聯應用。

可同時監控多顆電池！



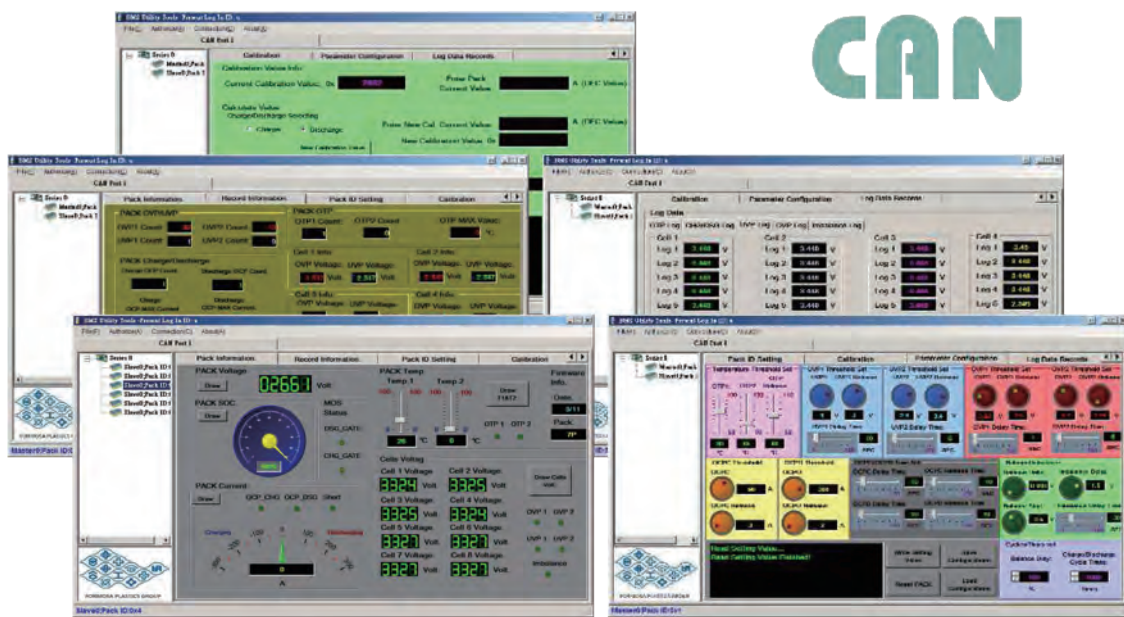
具藍牙通訊功能，可結合手機、平板或車載電腦顯示電池資訊！



24V Starter Battery and Energy-stored Battery Product:

- Possess CANbus communication function, compatible with CAN2.0B.
- Ability to communicate with other controllers, devices, and PCs.
- Ability to instantly monitor BMS interior data and historical data in the battery.
- Battery parameters are adjustable.
- Applied in series and parallel.

Can monitor several Batteries:



Possesses Bluetooth Communication Function to Display Battery Data when Connected to a Mobile Phone, Tablet PC, or other device.



台塑鋰鐵啟動電池產品與一般鉛酸啟動電池比較：

分析項目		一般鉛酸 啟動電池	台塑鋰鐵啟 動電池	台塑鋰鐵啟動電池特色	
1	重量	1	1/3	減輕車輛重量。	
2	瞬間放電	5C 低	30C 高	降低發電機負載、提高火星塞點火電壓，增加引擎燃燒效率，達到省油、馬力提升效果。	
3	充電效率	60%	95%		
4	負極頭氧化物	有	無		
5	自放電	30%/月	5%/月以下	自放電低，可避免車輛長時間停駛，或大燈未關，等因電池電力耗盡，而無法啟動引擎。 (備置 20% 電容量，供緊急備用、電啟動引擎)	
6	二次啟動備用電源	無	有		
7	防盜	無	有		
8	-20°C 低溫啟動	困難	佳	低溫與高溫使用性廣泛。	
9	整流穩壓性	差	佳	穩定電流提高車用電子零件特性與延長使用壽命。	
10	短路保護	無	有	避免電線走火危機。	
11	異常警報	無	有	發電機異常警報，確保行車安全。	
12	人為誤操作保護	無	有	具充放電電壓與電流保護，避免電池燃燒與爆炸。	
13	使用壽命	< 300 次	< 1500 次	壽命長、無重金屬鉛汙染、無硫酸液腐蝕疑慮，符合環保標準。	
14	電池維修與診斷	無	可		
15	汙染	有	無		

產品規格表：

12V 鋰鐵電池模組：

型號	SB-012036J	SB-012036E	SB-012040E	SB-012048E	SB-012060E
標稱電壓	13.2V				
標稱容量	36Ah	36Ah	40Ah	48Ah	60Ah
尺寸 (LWH)	239X131X219	260X178X203			
重量	5.8kg	6.5kg	6.6kg	8.6kg	9.2kg

24V 鋰鐵電池模組電池：

型號	SB1-024				SB2-024		
標稱電壓	26.4V						
標稱容量	25Ah	37.5Ah	50Ah	62.5Ah	62.5Ah	75Ah	87.5Ah
最大瞬間電流	2,000A						
通訊介面	CANbus						
尺寸	405X222X241mm				505X222X241mm		
重量	11kg	14kg	17kg	20kg	21kg	24kg	27kg

支援 CANbus 通訊，可多串至 360V

聯繫方式：台宇汽車股份有限公司

公司電話：886-2-27122211 轉 6811 公司傳真：886-2-25467626

公司地址：10508 台北市松山區敦化北路 201 號後棟九樓

E-mail：snopy@fpg.com.tw

Comparison between Formosa LFPO Smart Power Battery and Common Plumbic-acid Starter Battery:

Analyzed Item		Common Plumbic-acid Starter Battery	Formosa LFPO Smart Power Battery	Characteristics of Formosa LFPO Smart Power Battery		
1	Weight	1	1/3	Lower weight.	Energy saving	
2	Instant Discharge	5C Low	30C High	Reduces motor loading, increases ignition voltage in spark plug, enhances burning efficiency in engine, and achieves fuel-saving and power promotion effects.		
3	Charging Efficiency	60%	95%			
4	Cathode Head Oxide	Yes	No	The cathode head on plumbic-acid batteries can easily generate oxide and hinder charge & discharge.		
5	Self-discharge	30%/month	Below 5%/month	Low-self discharge, can prevent power exhaustion due to long-term driving, headlights left on, etc., and others, and thus unable to start engine (equipped with 20% capacitance for emergency use, power start engine)	Advantage	
6	Re-start Standby Power Source	No	Yes			
7	Anti-burglary	No	Yes			Anti-theft mode, unable to start engine.
8	-20°C Low-temperature initiating	Difficult	Good			Widely used in low and high temperatures.
9	Commutating and Voltage-stabilizing	Poor	Good	The steady current improves the characteristics in car electronics and extends service life.		
10	Short-circuit Protection	No	Yes	Prevents discharge on electric wire.	Safety	
11	Alarm in Case of Abnormal Condition	No	Yes	Abnormal alarm on motor, ensures traffic safety.		
12	Man-made Mis-operation Protection	No	Yes	Possesses charge-discharge voltage and current protection to prevent battery burning and explosion.		
13	Service life	< 300 times	>1,500 times	Long service life, non-heavy metal pollution, no worries about corrosion by contacting sulfuric acid and complies with RoHS environmental-protection standards.	Environmental protection	
14	Battery Maintenance and Diagnosis	Unavailable	Available			
15	Pollution	Yes	No			

Products Specifications:

12V FORMOSA LFPO Smart Power Battery:

Model	SB-012036J	SB-012036E	SB-012040E	SB-012048E	SB-012060E
Nominated Voltage	13.2V				
Nominated Capacity	36Ah	36Ah	40Ah	48Ah	60Ah
Dimension (LxWxH)	239X131X219		260X178X203		
Weight	5.8kg	6.5kg	6.6kg	8.6kg	9.2kg

24V FORMOSA LFPO Smart Power Battery:

Model	SB1-024				SB2-024		
Nominated Voltage	26.4V						
Nominated Capacity	25Ah	37.5Ah	50Ah	62.5Ah	62.5Ah	75Ah	87.5Ah
Maximum Instantaneous Current	2,000A						
Communication Interface	CANbus						
Dimension (LxWxH)	405 X 222 X 241 mm				505 X 222 X 241 mm		
Weight	11kg	14kg	17kg	20kg	21kg	24kg	27kg

Support CANbus Communication can reach 360V through series connection.

Contact Information:

Formosa Automobile Sales Corporation

TEL: 886-2-27122211 EXT. 6811 FAX: 886-2-25467626

ADD.: 9F., No. 201, Tung Hwa N. Road, Songshan Dist., Taipei City 10508, Taiwan (R.O.C.)

E-mail: snopy@fpg.com.tw