Product Solutions

FOR BETTER LIVING

Because our plastic and chemical products are all around you,
we take utmost care in every step throughout their journey
to deliver only the best for you.

About GC

PTT Global Chemical Public Company Limited (GC) is PTT Group's petrochemical flagship. We are committed to strengthening our leading position in the chemicals business by combining environmentally-friendly innovations with advanced technologies to develop products for people's better living.

GC comprises diversified and comprehensive petrochemical businesses, including manufacturing and distribution of upstream, intermediate, and downstream petrochemical products.

These products can be converted into other chemical products and serve as basic feedstock for downstream industries such as packaging, apparel, communications and electronic equipment, electrical appliances, vehicles, construction materials, engineering-based plastics, agricultural equipment, and much more. These products are not only part of our daily lives but they also enhance the way we live.

Shareholder

We deliver the best business performance through trustworthiness to create fair and sustainable value for shareholders.

Business Partner

We provide superior solutions from innovative and sustainable products and services to be the best choice for our business partners.

Mission

Vision

To be a Leading
Global Chemical Company
for Better Living

Society

We integrate social and environmental responsibility into our business practices to achieve sustainable development.

Employee

We build an organization that is prepared for dynamic change and learning by providing a happy working environment promoting the development of employees' capabilities and enabling them to meet new challenges with dedication to the organization and to professional excellence.

Product Overview & Certificate

InnoPlus by GC

InnoPlus is a registered trademark of PTT Global Chemical Public Company Limited (GC). GC manufactures Polyethylene (PE), nameplate capacity at 1,950,000 MTA per year and Polyethylene Terephthalate (PET) nameplate capacity at 200,000 MTA per year.

HDPE

InnoPlus High Density Polyethylene (HDPE) has a total production capacity at 850 KTPA. InnoPlus HDPE is made from the low-pressure polymerization using the slurry process of Mitsui Technology. InnoPlus HDPE offers high certainty of specific properties to meet all particular needs and complies with international standards regulations i.e., U.S FDA 21 CFR 177.1520 and EU 10/2011. InnoPlus HDPE also meet the Restriction of Hazardous Substances (RoHS) according to 2002/95/EC

LLDPE

InnoPlus Linear Low Density Polyethylene (LLDPE) has a total production capacity at 400 KTPA. This technology can provide a wide range of LLDPE products.

LDPE

InnoPlus Low Density Polyethylene (LDPE) has a total production capacity of 300 KTPA. InnoPlus LDPE is produced by a high pressure tubular process, a technology licensed by LyondellBasell.

Certificate of HDPE, LDPE, LLDPE

ISO 9001
Quality Management System by MASCI

ISO 50001
Energy Management System by MASCI

GHPs
Good Manufacturing Practice System by MASCI

mLLDPE

InnoPlus Metallocene Low Density Polyethylene (mLLDPE) has a total production capacity at 400 KTPA. InnoPlus mLLDPE is produced by low pressure polymerization, using gasphase of Unipol Process under the license of Univation Technolog who is leading global technology licensor of proven metallocene PE technology. These unconventional mLLDPE from variety of catalyst offer a superior puncture and draft impact resistance, good seal ability and excellent optical property. InnoPlus mLLDE is widely used for cast and blown film applications.

PET

InnoPlus Polyethylene Terephthalate (PET) has total production capacity at 200 KTPA. InnoPlus PET is produced by the leading technological know-how of Lurgi Zimmer GMBH (Germany) and Bühler AG (Switzerland).

ISO 14001
Environment Management System by MASCI

ISO45001
Occupational Health and Safety Assessment Series by MASCI

HACCP
Hazard Analysis Critical Control Point System by MASCI

GC Product Brand of Other Polymers

PlastMate is registered trademark of PTT Global Chemical Public Company Limited (GC) for various type of compound resin such as PE compound, PP compound, PS compound, PC compound, ABS compound and Bioplastics Compound.

InnoEco is registered trademark of PTT Global Chemical Public Company Limited (GC) for high quality recycled plastic resin products. (Post-consumer recycled: PCR) of the GC group.

Maximum production capacity of 45,000 tons of recycled plastic resins each year.

Consisting of 30,000 tons of PCR PET resin and 15,000 tons of PCR HDPE resin.

DIAREX is a registered trademark of PTT Global Chemical Public Company Limited for Polystyrene (GPPS and HIPS).

The capacity of GPPS and HIPS are 60,000 MTA and 30,000 MTA, totally 90,000 MTA. Furthermore, we offer a wide range of Diarex grade with various properties for using in injection molding or extrusion process.

X PURGE is registered trademark of GC Marketing Solutions Company Limited (GCM) subsidiary of PTT Global Chemical Public Company Limited (GC) for Purging compound. Distributed by GC Marketing Solutions Company Limited (GCM)

X PURGE is a high efficiency ready-to-use purging compound which provides fast and effective color, material change and contaminant removal in the machine without disassembly. X PURGE will reduce machine downtime and/or maximize productivity. This product is designed for cleaning various types of the machines i.e., injection molding machines, blow molding machine, blown film machine, sheet castingmachine.

InnoSis is a registered trademark of GC Marketing Solutions Company Limited, a subsidiary of PTT Global Chemical Public Company Limited (GC) for polyethylene trading.

Trading polyethylene of InnoSis is the product under the concept of being a leading distributor of plastic resin who is developing products to meet customer needs and create better quality products.

GC Product Label

Bioplastics are plastics derived from agricultural raw materials (Biobased) or petroleum (Petrobased). Bioplastics have a plastic-like quality and characteristics. They can be melted and formed by general processes with general machines; only slight adjustments may be needed. For bioplastics made from agricultural raw materials, they are produced by a fermentation process that converts agricultural raw materials into monomers, which are then used to produce plastic pellets. Currently, the raw materials used in bioplastics production are corn, sugarcane, and cassava.


START
TODAY
SAVE
TOMORROW

Solutions

For Every Product Applications

GC commits to continually develop plastic resins covering all applications various market to support all needs, reinfoce efficiency including adding value to products for all industries such as packaging, agriculture, home goods and personal care, construction, electrical appliances, automotive and others.

Automotive Parts

Because of durability, easy processing, possibly-renewable raw material and ability for design adjustment, plastic materials are commonly used in automotive industry.

The plastics can provide safety and stability with proper design while cheaper than metals. The global growth of plastic demand for automotive will be increasing significantly from some factors such as design ability, weight reduction, pollution emission control and design capability.

The common polymer materials used for automotive component and parts are Polypropylene (PP), Polyvinyl Chloride (PVC), Acrylonitrile Butadiene Styrene (ABS) and Polyurethane (PU). Weight reduction of vehicles can make more fuel efficiency and reduce greenhouse gas (GHG) emission in the cost-effective way.

International Standard Compliances

RoHS
Restriction of Hazardous Substances:EU Directive 2011/65/EU

TIS 816-2556* (มอก.816)
Polyethylene industrial standard

Halal
Islamic law for food relate goods/product

US FDA
Food and Drug Administration (FDA) Specification according to US FDA 21 code of Federal regulations part 177.1520 ©

EU FDA
Plastic Materials and Articles intended to Come into contact with food

JCII
Japan Chemical Innovation and Inspection Institute.

Phthalate Content
According to ASTM D3421-1975

GB9685 - 2016 (China FDA)
The Hygienic Standards for Uses of Additives in Food Containers and Packaging Materials" under GB31603- 2015

TAIWAN FDA
Sanitation STD. For food utensils, container and package

Organoleptic
German Food Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 31 - Sensory Examination Odour and

*This certification will be updated and revised by 2024 to TIS 816-2565

Automotive Parts

Exterior | Interior | Under The Hood | Coating | 2 Wheels

InnoPlus: HDPE					
Properties	Test Method	Unit	Film	Thermoform	Blow Molding/Thermoform
			HD6000F	HD7000H	HD7800B
MFR (190 °C, 2.16 kg)	ASTM D1238	g/10 min	0.16	0.1	0.04
MFR (190 °C, 21.6 kg)	ASTM D1238	g/10 min	-	10	6
Density	ASTM D1505	g/cm³	0.956	0.952	0.95
Melting Temperature	ASTM D3418	°C	135	130	134
Tensile Strength at Yield	ASTM D638	kg/cm²	260	280	300
Tensile Strength at Break	ASTM D638	kg/cm²	370	400	370
Elongation at Break	ASTM D638	%	950	900	850
Flexural Modulus	ASTM D790	kg/cm²	11,000	11,000	12,000
Notched Izod Impact Strength	ASTM D256	kg.cm/cm	27 (NB*)	42 (NB*)	72 (NB*)
Durometer Hardness	ASTM D2240	shore D	65	63	61
Vicat Softening Point	ASTM D1525	°C	125	126	125
ESCR; 25% Igepal, F_{50}	ASTM D1693	Hours	> 500	> 1,000	> 1,000
End Product			Fender (wheel arch liner)	Automotive Bed Liner	
Product Highlight			• Good processability and drawdown ability • High mechanical strength • Good stiffness • Good heat sealability	Outstanding mechanical strength, good weathering resistance and excellent product appearance	

Note : *C = Complete Break *P = Partial Break *NB = Non Break

InnoPlus: HDPE				
Properties	Test Method	Unit	Blow Molding	
			HD6600B	HD6200B
MFR (190 °C, 2.16 kg)	ASTM D1238	g/10 min	0.4	0.45
Density	ASTM D1505	g/cm³	0.957	0.962
Melting Temperature	ASTM D3418	°C	135	135
Tensile Strength at Yield	ASTM D638	kg/cm²	320	330
Tensile Strength at Break	ASTM D638	kg/cm²	400	350
Elongation at Break	ASTM D638	%	1,000	1,000
Flexural Modulus	ASTM D790	kg/cm²	14,000	15,000
Notched Izod Impact Strength	ASTM D256	kg.cm/cm	10 (P*)	12 (P*)
Durometer Hardness	ASTM D2240	shore D	65	65
Vicat Softening Point	ASTM D1525	°C	125	125
ESCR; 25% Igepal, F_{50}	ASTM D1693	Hours	400	60
End Product			Reservoir Tank	Air Duct
Product Highlight			High environmental stress cracking resistance (ESCR) High impact strength Wide variety blow molding applications of small to medium size container	High density polyethylene blow molding grade with optimum balance of processability, environmental stress cracking resistance (ESCR) and impact strength. They are used for wide variety blow molding applications of small to medium size container.

Note : *C = Complete Break *P = Partial Break *NB = Non Break

InnoPlus: LLDPE			
Properties	Test Method	Unit	Injection
			LL8420A
MFR (190 °C, 2.16 kg)	ASTM D1238	g/10 min	20
Density	ASTM D792	g/cm³	0.924
Molded Plague Properties			
Tensile Strength at Yield	ASTM D638	MPa	15
Tensile Strength at Break	ASTM D638	MPa	10
Elongation at Break	ASTM D638	%	700
Secant Modulus	ASTM D638	MPa	310
Vicat Softening Point	ASTM D1525	°C	92
Durometer Hardness	ASTM D2240	Shore D	53
End Product			Fender (wheel arch liner)
Product Highlight			Designed for injection molding application. This grade has very narrow molecular weight distribution, offers an excellent impact strength, rigidity, environmental stress cracking resistance and processability

Note :
(1) Flim properties obtained from 25 microns film which was blown film extruded at blow up ration 2.5
(2) Film properties obtained from 25 microns film which was casted film

Compound Resin			
Properties	Test Method	Unit	PlastMate PC20006J
Physical Properties			
Melt Flow Rate (MFR) (260 °C, 5 kg)	ISO 1133	g/10 min	17
Density	ISO 1183	g/cm³	1.13
Rockwell Hardness	ISO 2039	R-Scale	108
Mechanical Properties			
Tensile Strength at Yield	ISO 527	MPa	52
Elongation at Break	ISO 527	%	> 50
Tensile Modulus	ISO 527	MPa	2,300
Flexural Strenght	ISO 178	MPa	75
Flexural Modulus	ISO 178	MPa	2,300
Notched Charpy Impact Strength at 23 °C	ISO 179	kJ/m²	45
Notched Charpy Impact Strength at -30 °C	ISO 179	kJ/m²	25
Thermal Properties			
Heat Deflection Temperature at 0.45 MPa	ISO 75	°C	119
Heat Deflection Temperature at 1.80 MPa	ISO 75	°C	102
VICAT at 50 N	ISO 306	°C	120

Compound Resin			
Properties	Test Method	Unit	PlastMate PP09310J
Physical Properties			
MFR	ISO 1133	g/10 min	9
Density	ISO 1183-1A	g/cm³	1.14
Mechanical and thermal Properties			
Tensile Stress @ Yield (50 mm/min)	ISO 527	MPa	90
Tensile Strain @ Break (50 mm/min)	ISO 527	%	3
Flexural Modulus (2 mm/min)	ISO 178	MPa	6,000
Charpy (Notched) Impact Strength (23 °C)	ISO 179	kJ/m²	8
Heat Deflection Temp. (1.80 MPa)	ISO 75	°C	141

Note: Properties reported here are typical values of the product, not to be considered as specifications.
Solution Creation makes no representations as to the accuracy or completeness of the information contained herein.

Automotive Parts (Cont.)

Compound Resin			
Properties	**Test Method**	**Unit**	**PlastMate PP07605JBK**
Physical Properties			
Melt Flow Rate (230 °C, 2.16 kg)	ASTM D1238	g/10 min	8
Density	ASTM D792	g/cm³	0.91
- Machine Direction (MD)			1.2 ± 0.1
- Transverse Detection (TD)			1.2 ± 0.1
Mechanical and Thermal properties			
Tensile Strength at Yield	ASTM D638	MPa	20
Elongation at Break	ASTM D638	%	200
Flexural Strength	ASTM D790	MPa	43
Flexural Modulus	ASTM D790	MPa	1,240
Notched Izod Impact Strength at 23 °C	ASTM D256	J/m	108
Notched Izod Impact Strength at -2 0 °C	ASTM D256	J/m	45
Modified Dupont Impact Strength (3.0 mm, 23 °C)[1]	Internal	J	34
Modified Dupont Impact Strength (3.0 mm, -20 °C)[2]	Internal	J	22
Heat Deflection Temperature at 0.45 MPa	ASTM D648	°C	120
Heat Deflection Temperature at 1.80 MPa	ASTM D648	°C	60
Hardness	ASTM D785	R-scale	82
End Product			Mirror Housing
Product Highlight			Black PP compound with special properties as below: • Good weathering resistance • High ductility • High tensile strength

Recommendation : For injection molding
- Melt temperature*: 190–250 °C
- Screw speed for screw diameter of 35 mm: 30–60 rpm
- Drying condition: 80 °C at least 2 hours before using.
- Mold temperature: 45–65 °C
- Back pressure: 5–10 MPa

* However, the actual processing conditions depend on mold design, power of machine, equipment and other environments

1. Thickness of test specimen: 3 mm, Weight: 3 kg, High: 200 cm
2. Thickness of test specimen: 3 mm, Weight: 3 kg, High: 65 cm
3. Measure by internal plaque

Compound Resin			
Properties	**Test Method**	**Unit**	**PlastMate PP11001J** Color Available: Natural, Grey (GY)
Physical Properties			
Melt Flow Rate (230 °C, 2.16 kg)	ISO 1133	g/10 min	11
Density	ISO 1183	g/cm³	0.91
Mechanical and Thermal Properties			
Tensile Strength	ISO 527	MPa	36
Flexural Modulus	ISO 178	MPa	1,500
Notched Charpy Impact Strength at 2 3°C	ISO 179	kJ/m²	3
Notched Izod Impact Strength at 23 °C	ISO 180	kJ/m²	3
Heat Deflection Temperature at 0.45 MPa (Unannealed)	ASTM D648	°C	100
End Product			Rear Mirror Housing
Product Highlight			Polypropylene compound for injection grade with special properties as below: • Specially designed for UV resistance • High ductility • High tensile strength

Recommendation :
For injection molding
- Melt temperature: 190–240 °C*
- Mold temperature: 45–65 °C

* However, the actual processing conditions depend on mold design, power of machine, equipment, and other environments.

Typical application: Injection molded part for outdoor users			
Properties	**Test Method**	**Unit**	**PlastMate PP C1803PJ-04** Color : Black
Physical Properties			
Melt Flow Rate (230 °C, 2.16 Kg)	ISO 1133	g/10 min	7
Density	ISO 1183	g/cm³	1.04
Mold Shrinkage (Average MD/TD)	ISO 2577	%	1.02
Mechanical Properties			
Tensile Strength	ISO 527	MPa	25
Elongation	ISO 527	%	15
Tensile Modulus	ISO 527	%	2,400
Flexural Strength	ISO 178	MPa	36
Flexural Modulus	ISO 178	MPa	2,200
Notched Izod Impact Strength at 23 °C	ISO 180	kJ/m²	5
Notched Charpy Impact Strength at 23 °C	ISO 179	kJ/m²	5
Thermal Properties			
Heat Deflection Temperature at 0.45 MPa	ISO 75	°C	112
Heat Deflection Temperature at 1.80 MPa	ISO 75	°C	62

Recommendation:
For injection molding
• Melt temperature: 190–240 °C*
• Mold temperature: 45–65 °C
* However, the actual processing conditions depend on mold design, power of machine, equipment, and other environments.

Typical application: Injection molded part for Interior			
Properties	**Test Method**	**Unit**	**PlastMate PP25027JGY** Color : Grey
Physical Properties			
Melt Flow Rate (230°C, 2.16 kg)	ISO 1133	g/10 min	25
Density	ISO 1183	g/cm³	1.07
Mechanical and Thermal properties			
Tensile Strength at Yield	ISO 527	MPa	24
Elongation at Break	ISO 527	%	2,880
Flexural Strength	ISO 178	MPa	36
Flexural Modulus	ISO 178	MPa	2,700
Notched Izod Impact Strength at 23 °C	ISO 180	kJ/m²	8
Heat Deflection Temperature at 0.45 MPa	ISO 75	°C	115

Recommendation:
For injection molding
• Melt temperature: 190–240 °C*
• Mold temperature: 45–65 °C
* However, the actual processing conditions depend on mold design, power of machine, equipment, and other environments.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose. All above values are typical values, not to be construed as specification.

GC

Chemistry For Better Living

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Technical Document for Polymer Products

LINE Official Account

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Date as of December 2023