

SPESIN[®]
Polybutylene Terephthalate

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KOLON ENP at a glance

KOLON ENP is dedicated to making the world a better place by drawing on the DNA of KOLON Group, 'LifeStyle Innovator.' As a leading engineering plastics manufacturing company in Korea, it has developed a diverse product portfolio, which includes POM, PA, PBT, TPEE, and supplies these products to over 90 countries worldwide.

KOLON ENP is committed to providing unique value to its customers, through continuous research and development and by improving the competitiveness of its products.

KOLON ENP has gained market recognition and the trust of its customers. In the future, We will continue to grow as a company that garners attention in the market and earns the trust of its customers by providing even greater value to them.



ESTABLISHMENT
March 15, 1996



HEAD OFFICE
Korea



SALES
350 mil. USD (2023)



PRODUCTS
8 Brands, 400 Grades

SPESIN®

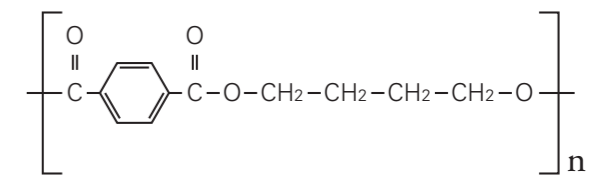
Polybutylene Terephthalate

SPESIN® (PBT)

SPESIN® (PBT) from KOLON ENP is a semi-crystalline thermoplastic resin with excellent chemical resistance to various organic solvents and oils.

It has fast crystallization speed, high strength and stiffness, excellent dimensional stability, low moisture absorption and strong insulation resistance. These characteristics are used as the material of major parts throughout the industry, and it is widely used in Electronics and Electrical industries.

KOLON ENP offers SPESIN®, a functional PBT that adds PBT's superior physical properties and differentiated compounding technology to meet customer needs.



[PBT Molecular Formula]
PBT is produced through polymerization of terephthalic acid and 1,4-butanediol.

MECHANICAL

Several grades of SPESIN® utilize a variety of stiffeners and differentiated compounding techniques to provide excellent mechanical properties such as stiffness, strength and impact resistance. We supply various glass fiber reinforced grades with excellent strength and stiffness as main products.

ELECTRICAL

Plastics for electricity and electronic applications require excellent electrical properties, mechanical strength and dimensional stability. Meeting all these requirements, SPESIN® is the ideal plastic for electricity and electronic applications. SPESIN® is used in a variety of electricity and electronic industries including connectors.

HYDROLYSIS RESISTANT

Polyester materials, including PBT, have the potential to degrade the properties and properties of materials due to hydrolytic degradation of polymer chains that bind to moisture at high temperatures. SPESIN® develops and supplies in-hydrolysis grades that can be used in humid conditions.

DIMENSIONAL STABILITY & EXCELLENT MOLDABILITY

The rapid crystallization rate of SPESIN® improves work efficiency by shortening the cycle time in injection molding process and realizes excellent dimensional stability due to rapid crystallization during molding.

HEAD LAMP BEZEL

KP211DC, KP211DC, KP211DCHM

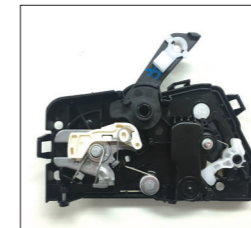
- ▶ Excellent adhesion of AL direct coating
- ▶ Excellent surface
- ▶ Excellent flowability



DOOR LATCH HOUSING

KA213G30BL, KA213G30BL, KP213G30BL

- ▶ Low warpage
- ▶ Dimensional stability



WIPER BLADE

KP515G30BK, KP515G40BK

- ▶ Excellent strength
- ▶ Dimensional stability
- ▶ Weather resistance



OPTICAL CABLE LOOSE TUBE

KP270EX, KP270EXLN

- ▶ High viscosity
- ▶ Excellent Feeding Stability
- ▶ High Stiffnessstability



IGNITION COIL

KP213G30, KP213G30SB3

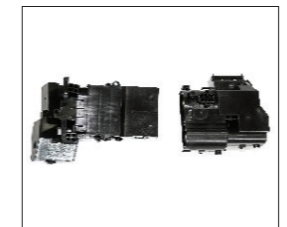
- ▶ Excellent Thermal Resistance
- ▶ Excellent Electrical Properties



CHARGING INLET PROTECTOR (EV)

KP213G15BL

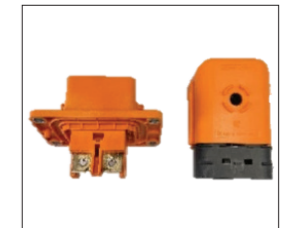
- ▶ Dimensional Stability
- ▶ High Stiffness



HIGH VOLTAGE CONNECTOR (EV)

KP213G15OR

- ▶ High Electrical Insulation
- ▶ Vivid Orange Color



MOC HOUSING

KP213G30LTBL

- ▶ Laser transmission
- ▶ Laser welding



SEALED CONNECTOR

KP216HR, KP211HR

- ▶ Anti Hydrolysis
- ▶ High Thermal Stability



OVERVIEW PRODUCT PORTFOLIO

MATERIAL CATEGORY	GRADE	FEATURES OF MATERIAL	TYPICAL APPLICATION
UNREINFORCED	KP211	PBT, medium viscosity	General use
	KP210K	PBT, medium viscosity, FDA food contact	Tooth brush head, Cosmetic case
	KP211DC	PBT, head lamp bezel use, aluminum direct coating possible, black color	Head lamp bezel
	KP211DCHM	PBT, head lamp bezel use, aluminum direct coating, black color, easy flow	Head lamp bezel
	KP270	PBT, general use	Connector
	KP270EX	PBT, OFC use, high viscosity	Optical fiber cable tube
	KP270EXLN	PBT, OFC use, high viscosity, high productivity	Optical fiber cable tube
GF - REINFORCED	KP213G10	PBT GF10, general use	Bobbin housing
	KP213G15	PBT GF15, general use	Motor bobbin
	KP213G20	PBT GF15, general use	Door latch housing
	KP213G30	PBT GF30, general use	Door latch housing, Ignition coil
	KP213G150R	PBT GF15, orange color	High voltage connector
	KA213G30BL	PBT/ASA GF30, low warpage	Door latch, Radome
WEATHER RESISTANCE	KP515G30BK	PBT/PET GF30, black color, good surface, weather resistance	Wiper blade
	KP515G40BK	PBT/PET GF40, black color, good surface, weather resistance	Wiper blade
	KP515G45BK	PBT/PET GF45, black color, good surface, weather resistance	Wiper blade
	KP515G50BK	PBT/PET GF50, black color, good surface, weather resistance, high mechanical property	Mirror base plate, Head lamp base plate
	KP515FLBL	PBT Impact modified	Window wiper clip
IMPACT - MODIFIED & STABILIZED	KP270HI	PBT, Impact modified	Connectors
	KP213G15HIBL	PBT GF15, Impact modified	FAKRA connectors
	KP213G30SB3	PBT GF30, Impact modified	Ignition coil
HIGHLY ANTI-HYDROLYSIS	KP216HR	PBT, Highly anti-hydrolysis, Impact modified	Engine room connector
	KP211HR	PBT, Highly anti-hydrolysis	Engine room connector
	KP213G30SB3U	PBT GF30, Epoxy adhesion	Ignition coil, Connector
LASER TRANSPARENT	KP213G30LTBL	PBT GF30, laser transparent, black color	ECU & Sensor housing
	KP511G30LTBL	PBT/PET GF30, laser transparent, black color, glossy surface	ECU & Sensor housing
	KA211G30LTBL	PBT/SAN GF30, high laser transparent, black color, low warpage	ECU & Sensor housing
FLAME RETARDANT (FR)	KP2122V0	PBT, halogen, V0 (@0.55mm), GWIT 850 (@0.55mm), CTI 0	Connectors
	KP212G15V0	PBT GF15, halogen, V0 (@0.75mm), CTI 4	Connectors
	KP212G30V0	PBT GF30, halogen, V0 (@0.75mm), CTI 3	Connectors
	KP212G15VF	PBT GF15, non-halogen, V0 (@0.75mm), GWIT 775 (@0.75mm), CTI 0	Connectors
	KP212G30VF	PBT GF30, non-halogen, V0 (@0.75mm), GWIT 775 (@0.75mm), CTI 0	Connectors

NOMENCLATURE

The name of SPESIN® commercial products generally follows the scheme below:

RESIN			VISCOSITY	CHARACTERISTICS	ADDITIVES	CONTENT	COLOR		
K	P	2	1	3	G	3	0	B	L

RESIN

KP2	PBT
KP5	PBT/PET alloy
KA	PBT alloy

ADDITIVES

C	Carbon fiber
G	Glass fiber
MT	Mineral Talc
HB	GF/Mineral
None	Unreinforced

VISCOSITY

1	Low viscosity
3	Middle viscosity
7	High viscosity
8	High viscosity
9	High viscosity

CONTENT

20	20%
30	30%
40	40%

CHARACTERISTICS

1	Mold releasing
2	Flame retardant
3	Heat resistance
5	Weather resistance
6	Anti-Hydrolysis
7	for monofilament

COLOR

BL	Black
BK	Black
BU	Blue
GR	Gray
WH	White
None	Natural color

THE PROPERTIES OF SPESIN®

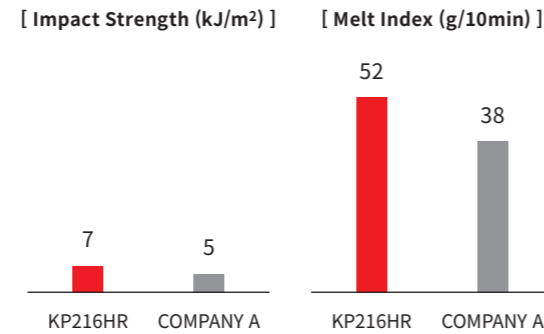
SPESIN® FOR CONNECTOR

SPESIN® meets all the requirements for high flow, high impact resistance and high durability required by PBT for connectors .

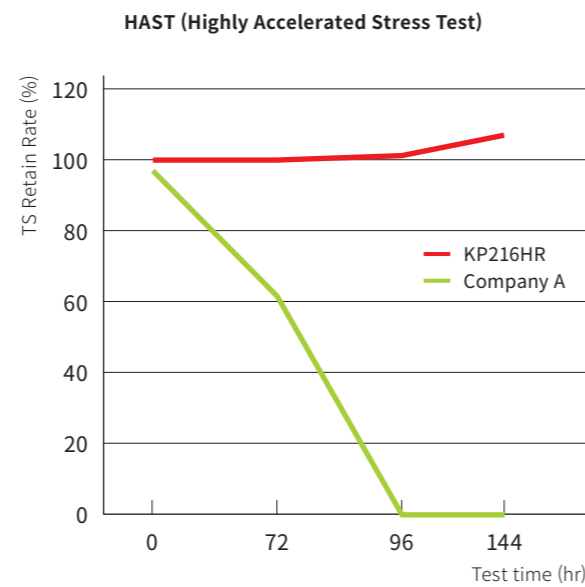
SPESIN® is a material that satisfies both rolling drop, fastening strength, terminal retention and high vibration durability.

It can be applied without limitation of product thickness, structure and usage.

HIGH IMPACT - HIGH FLOWABILITY SIMULTANEOUS SATISFACTION



EXCELLENT HYDROLYSIS RESISTANCE

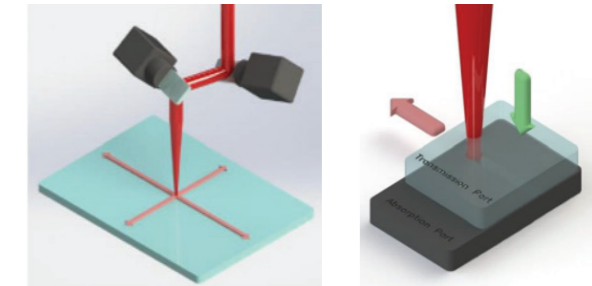


	KP216HR	Company A
0	100	95.8
72	100	60.8
96	102	0
144	106.2	0

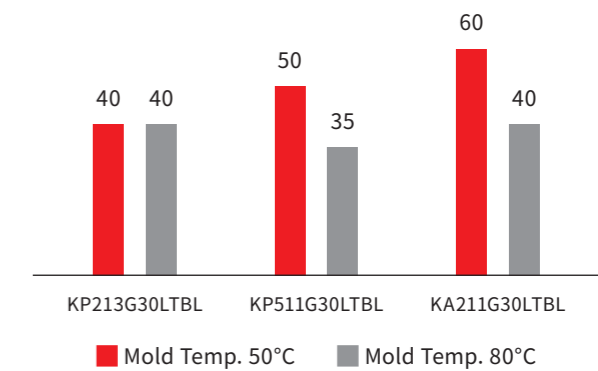
SPESIN® FOR LASER WELDING

Laser-transmissible PBT material

- Due to its high laser transmittance, excellent joining performance can be achieved through laser welding.
- The material portfolio includes various types of materials such as PBT GF30%, PBT/PET GF30%, PBT/SAN GF30%.
- It is possible to achieve a black color similar to that of the mating part (laser-absorbing material)



Laser Transmittance at 2mm (%)



Material Grades

- KP213G30LTBL(PBT GF 30%, black color): Minimizes variation in transmittance depending on processing conditions
- KP511G30LTBL(PBT/PET GF 30%, black color): Excellent surface properties, high transmittance
- KA211G30LTBL(PBT/SAN GF 30%, black color): Low density, low warpage, dimensional stability, high transmittance

SPESIN® FOR AUTOMOTIVE WIPER BLADE

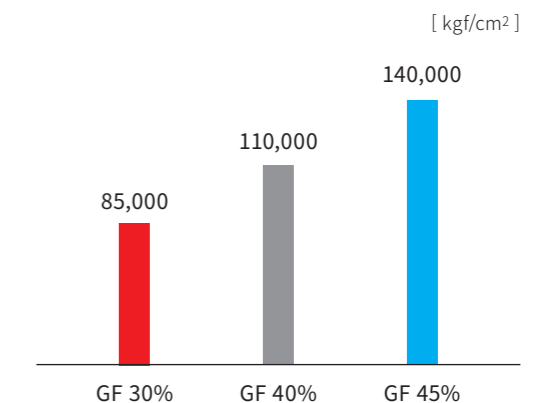
SPESIN® achieves high mechanical strength and excellent performance as an automotive plastic wiper blade.

In addition, it meets the following weather stability.

Weather resistance Spec (MS210-06)
Under SAE J2527 regulations, Xenon Arc test.
→ Gray scale 4 grade, at 2500KJ/m²

KOLON ENP supplies a variety of glass fiber reinforced products to meet customer requirements.

FLEXURAL MODULUS BY GLASS FIBER CONTENT



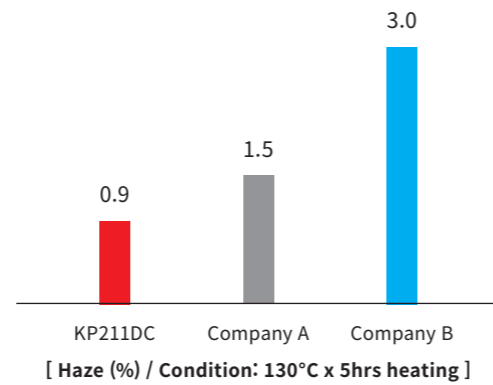
THE PROPERTIES OF SPESIN®

SPESIN® FOR HEAD LAMP BEZEL

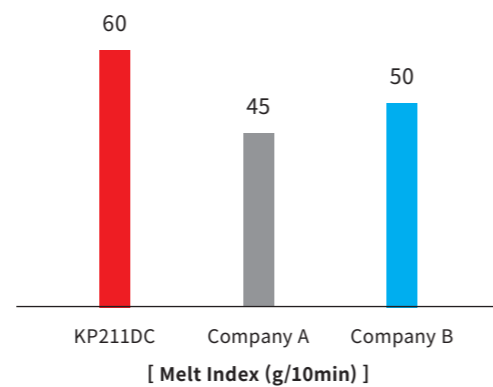
SPESIN® has high fluidity due to the thinness and light weight of complex product shapes and product thicknesses required for head-lamp bezels for direct coatings.

It also has the effect of reducing the defect rate in the coating process based on low gas release and haze characteristics.

LOW GAS EMISSION



HIGH FLOW



Note: KOLON ENP has prepared this report based on the data obtained up to the time of writing. The figures in all tables are representative values, not quality assurance values. The figures in the table can not be used as basic data for semi-finished products and finished product designs. As product quality improves, figures in the table may change without notice.

INJECTION CONDITIONS & HANDLING PRECAUTIONS

PRE-DRYING

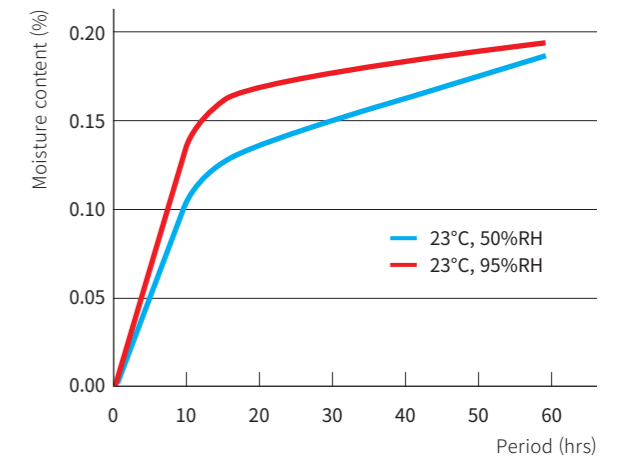
SPESIN® is a thermoplastic polyester material, and if it is molded in a state containing water, the property may be lowered.

If the PBT is in a moisture-absorbed state, surface quality problems may occur, including deterioration of long-term physical properties.

Therefore, pre-drying of the resin is required. It is recommended to use a dehumidifying dryer at a temperature of 110~120°C for 4~5 hours.

SPESIN® is low in moisture absorptivity compared to materials such as PA. However, there is a risk of fluctuation of injection or extrusion characteristics depending on the moisture absorption amount, and it is preferable to maintain the water content of 0.04% or less in tube extrusion or micro injection molding. We recommend that you.

MOISTURE ABSORPTION RATE OF PBT/ PERIOD (PELLET)



CONDITIONS OF INJECTION MOLDING

INJECTION MOLDING PARAMETERS	UNFILLED PBT	REINFORCED PBT	REINFORCED PBT/PET	
Recommended Moisture Contents (%)	≤ 0.04 %			
Melting Temperature (°C)	225 ± 5	225 ± 5	255 ± 5	
Cylinder Temperature (°C)	Nozzle	240 ~ 260	255 ~ 265	250 ~ 280
	Front	240 ~ 260	245 ~ 265	255 ~ 285
	Middle	235 ~ 250	235 ~ 250	250 ~ 275
	Rear	225 ~ 240	230 ~ 240	240 ~ 265
Mold Temperature (°C)	60 ~ 100	60 ~ 100	60 ~ 100	
Holding Pressure (%)	35%~65% of maximum injection pressure			
Cushion (mm)	5 ~ 10			



For more detailed information regarding injection molding conditions, please contact the technical support representative at KOLON ENP.



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