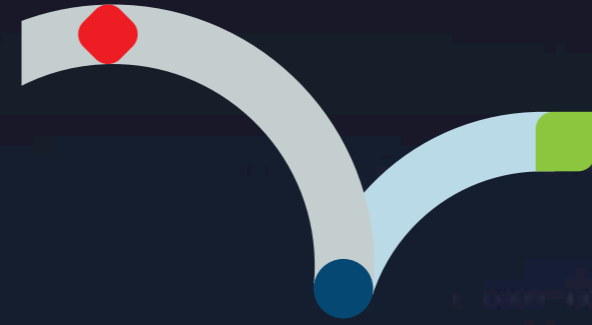


# Mobility Material Solutions

The Future of Mobility



# Mobility Material Solutions



[www.lottechem.com](http://www.lottechem.com) (Corporate Website)

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LOTTE Chemical is committed to creating value beyond customer's expectation, at the center of **future** of automotive based on **competitive** products, **innovative** solution, and in close partnership with you.

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## Product Portfolio

### Compound PP & LFT

#### Popelen.

##### Exterior

- High Modulus
- Thin-wall

##### Interior

- High Impact
- Scratch Resistance

#### Supran.

##### PP/LGF

- High Modulus
- High Impact
- High Heat Resistance
- Low Emission

##### WLFT

- Light Weight

### ABS & ASA

#### starex®

##### ABS

- Metal Plating
- Heat Resistance

##### ASA

- General/Weatherability
- High Gloss(ASA/PMMA)

### PC, PC Alloy & EP

#### INFINO®

##### PC

- Lens PC
- Diffusion/High Impact PC
- Scratch Resistant PC

##### PC Alloy

- PC/ABS
- PC/Polyester
- PC/ASA

### Flame Retardant Product for EV Battery

##### Compound PP

- High Modulus

##### PC, PC/Alloy

- High Heat Resistance
- High Modulus

##### EP

- High Modulus / Dimensional stability

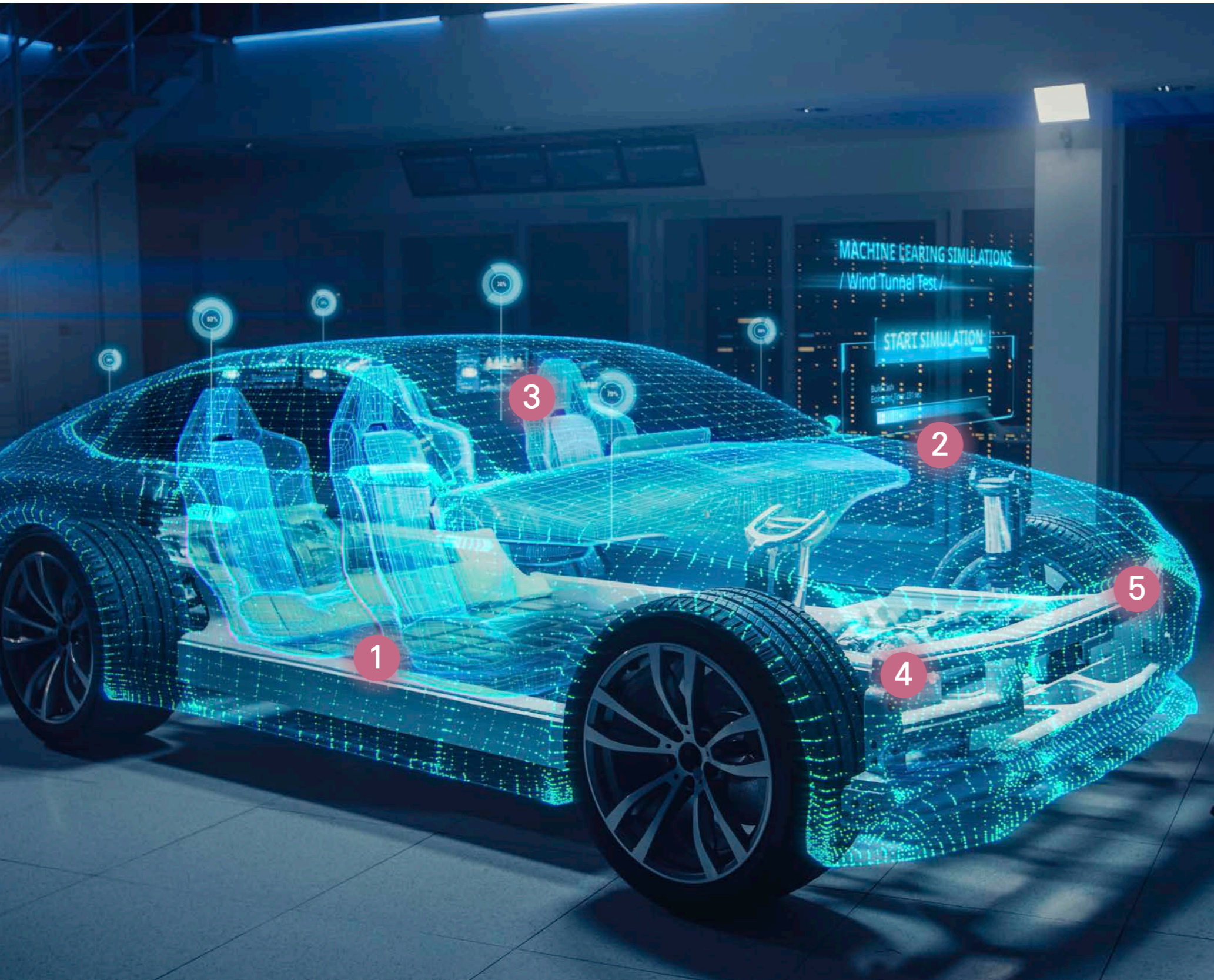
### Performance Materials

#### Lottmer



##### TPE

- TPE-V
- TPE-S

# Mobility Integrated Solution





### 1. EV Platform

			- Battery Module - Battery Pack
<b>Light-weight &amp; Metal Replacement</b>	<b>Safety</b>	<b>Flame Retardant</b>	



### 2. Exterior

		- Front End Module - Sunroof Frame - Fender - EV Battery
<b>Weatherability</b>	<b>Safety</b>	



### 3. Interior

		- Instrument Panel - Center Console - Seat Assembly - Door Module
<b>Fresh &amp; Eco-friendly Interior</b>	<b>Upscale Design</b>	

### 4. Lighting

		- Head Lamp - Rear Lamp
<b>Functionality &amp; Productivity</b>	<b>Optical Solution</b>	

### 5. Structure & Powertrain

		- Front End Module - Sunroof Frame - Fender - EV Battery
<b>Light-weight &amp; Metal Replacement</b>	<b>Part-integrated Design</b>	



# Compound PP & LFT



## PRODUCT LINE-UP

### Popelen<sup>®</sup>

Compound PP

#### Exterior & Lighting

**High modulus**

- G-152
- GLW-373
- GHE-500NP
- SRX-373M

**Thin-wall**

- SRX-373TM

#### Interior

**High impact**

- HSP-375
- QHCA-352M

**Scratch resistant**

- JHC-372GW
- JHC-3505

### Supran<sup>®</sup>

LFT

#### PP/LGF

**High modulus**

- PP-1320B
- PP-1330B
- PP-1340B

**High impact**

- PP-2320E
- PP-2340BJ

**High heat resistant**

- PP-13330H
- PP-1360H

**Low Emission**

- PP-1330LE
- PP-1360LE

**High weatherability**

- PP-13330UV
- PP-1340UV

**High surface quality**

- PP-1330T

**Light-weight**

- WLFT-5118BL

\* For inquiries about anti-microbial, eco-friendly materials, please contact us.

# Compound PP for Exterior & Lighting

## Key Features



Durability



High Heat Resistance



Dimensional Stability



Flowability



High Modulus



Low Density

High Modulus

Thin-wall

## APPLICATIONS

High Modulus

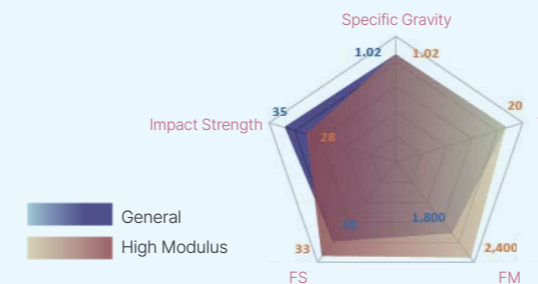
· Bumper (Bracket) · Cowl Top Cover · Head Lamp Housing

Thin-wall

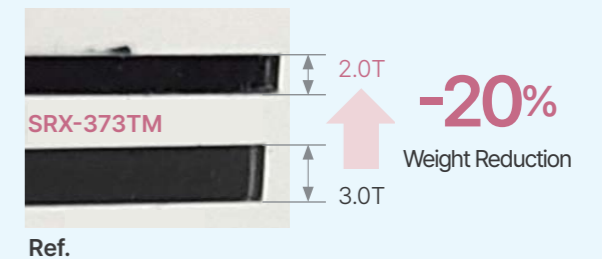
· Bumper (Fascia, Grille)

## CHARACTERISTICS

### Balanced Properties



### Balanced Properties



## PRODUCT DATA

Properties	Test Method	Unit	G-152	GLW-373	SRX-373M	SRX-373TM	
			High Modulus				Thin-wall
			Bumper Bracket	H/L Housing	Bumper	Bumper	
Specific Gravity	ISO 1183	-	1.04	1.10	1.00	1.02	
MI	ISO 1133	g/10min	-	27	38	40	
TS at yield	ISO 527	MPa	80	60	18	19	
FM	ISO 178	MPa	105	85	26	32	
FS	ISO 178	MPa	3,700	3,800	1,770	2,400	
Impact Strength	ISO 180 1A(23°C)	KJ/m <sup>2</sup>	6	6	34	25	
HDT	ISO 75A-2(1.8MPa)	°C	145	-	-	-	
	ISO 75A-2(0.45MPa)		-	144	100	101	



Cowl Top Cover



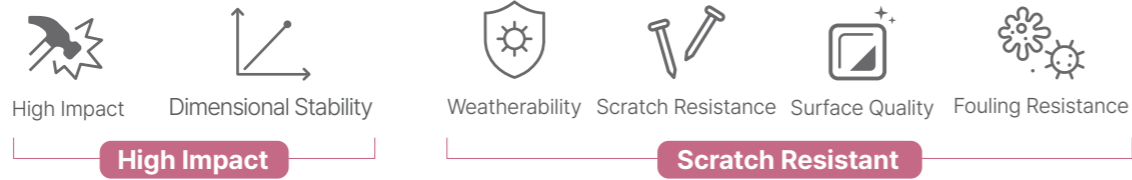
Head Lamp Housing



Bumper Fascia

# Compound PP for Interior

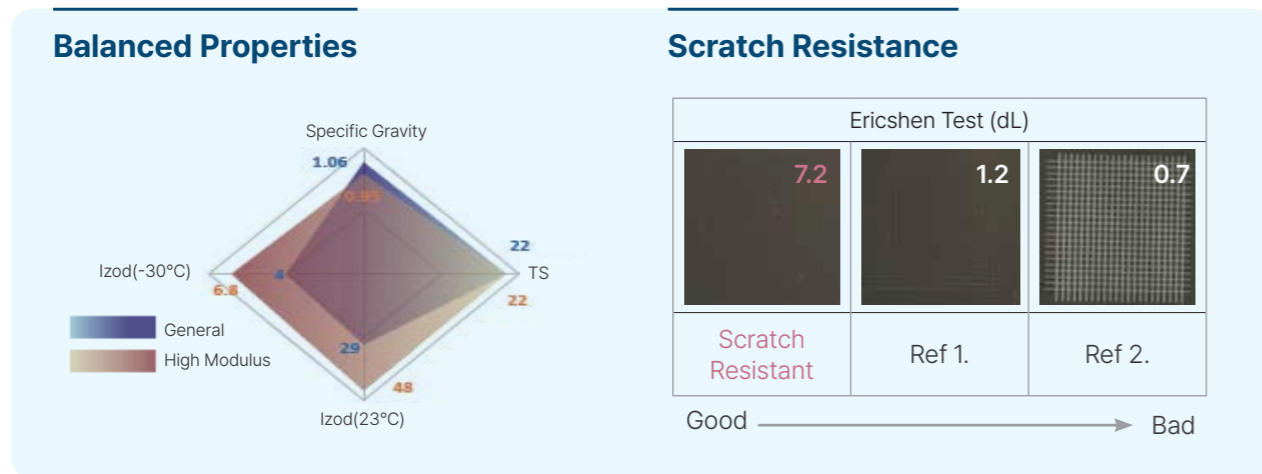
## Key Features



## APPLICATIONS

- High Impact** · Instrument Panel
- Scratch Resistant** · Door trim · Console · Cockpit · Instrument Panel · Seat Back (Cover)

## CHARACTERISTICS



## PRODUCT DATA

Properties	Test Method	Unit	JHC-3505	QHCA-352M	JHC-372GW
			High Impact		Scratch Resistant
			Door Trim	Door Trim	Console
Specific Gravity	ISO 1183	-	0.95	1.04	1.04
MI	ISO 1133	g/10 Min	25	18	25
TS at yield	ISO 527	MPa	22	17	20
FM	ISO 178	MPa	32	-	34
FS	ISO 178	MPa	1,750	1,750	2,050
Impact Strength	ISO 179 1eA	KJ/m <sup>2</sup>	-	25	-
	ISO 180 1A (23°C)		14	-	5
HDT	ISO 75A-2 (1.8MPa)	°C	-	87	103
	ISO 75A-2 (0.45MPa)		105	-	-



# High Modulus LFT / High Impact LFT

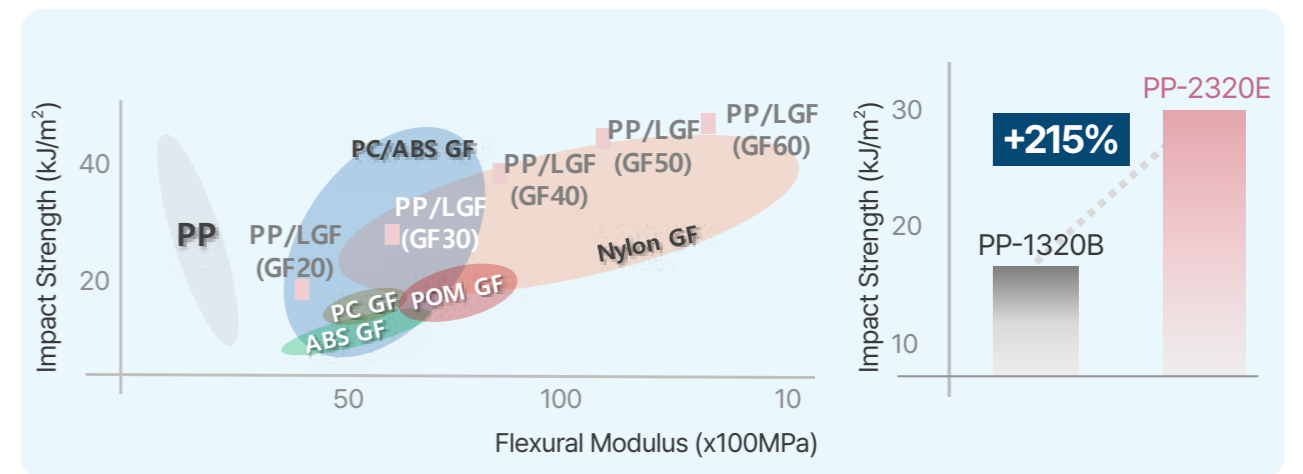
## Key Features



## APPLICATIONS

- High Modulus** · Door Module
- High Impact** · Step Pad · Instrument Panel · Active Grille Shutter

## CHARACTERISTICS



## PRODUCT DATA

Properties	Test Method	Unit	PP-1320B	PP-1330B	PP-1340B	PP-2320E	PP-2340BJ
			General			High Impact	
GF	-	%	20	30	40	20	40
Specific Gravity	ISO 1183	-	1.03	1.1	1.21	1.03	1.21
TS at yield	ISO 527	MPa	90	110	130	65	115
FM	ISO 178	MPa	130	170	190	80	170
FS	ISO 178	MPa	4,800	6,900	9,000	3,300	7,400
Impact Strength	ISO 180 1A(23°C)	KJ/m <sup>2</sup>	13	17	25	29	28
HDT	ISO 75A-2(1.8MPa)	°C	151	155	156	151	156



# High Heat Resistant / Low Emission LFT

## Key Features

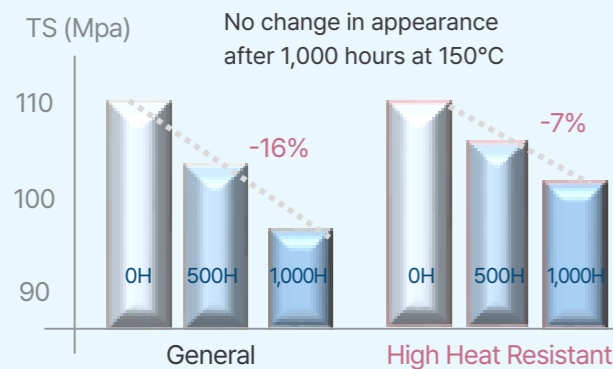


## APPLICATIONS

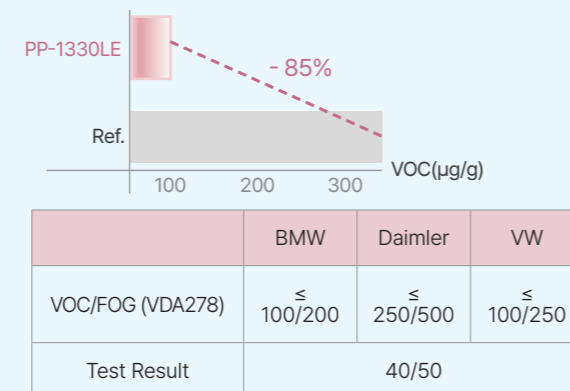
- High Heat Resistant** · Front End Module · Fan Shroud · Tail Gate
- Low Emission** · Door Module · Instrument Panel

## CHARACTERISTICS

### High Heat Resistance



### Low Emission



## PRODUCT DATA

Properties	Test Method	Unit	PP-1330H	PP-1360H	PP-1330LE	PP-1360LE
			High Heat Resistant		Low Emission	
GF	-	%	30	60	30	60
Specific Gravity	ISO 1183	-	1.11	1.47	1.11	1.47
TS at yield	ISO 527	MPa	110	140	110	140
FM	ISO 178	MPa	170	210	170	210
FS	ISO 178	MPa	6,500	13,000	6,300	13,000
Impact Strength	ISO 180 1A(23°C)	KJ/m <sup>2</sup>	17	35	16	35
HDT	ISO 75A-2(1.8MPa)	°C	155	158	155	158



Front End Module



Tail Gate



Door Module

# Compound Materials for Light-weight

## WLFT

\* Woven Long-Fiber Hybrid Thermoplastic Composites

## Key Features

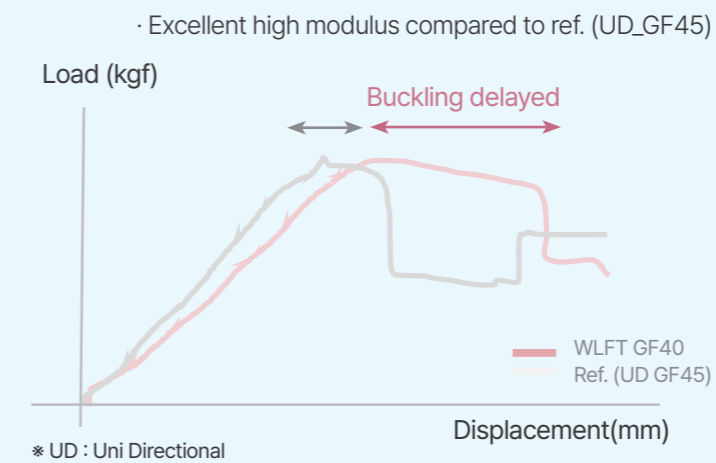


## APPLICATIONS

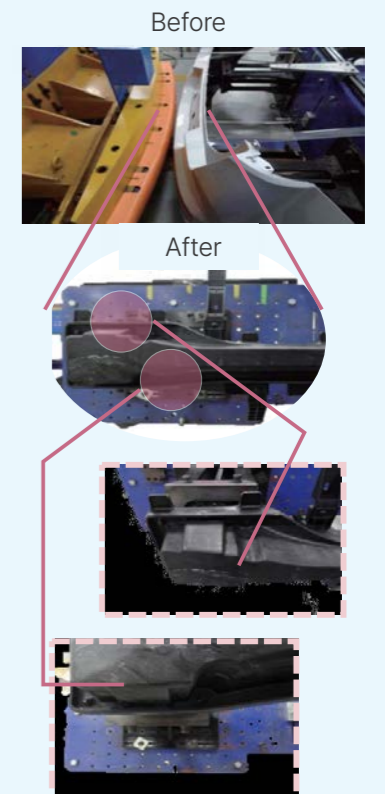
- Bumper Back Beam · Battery Pack · Stiffener

## CHARACTERISTICS

### High Modulus : Dead Load Test

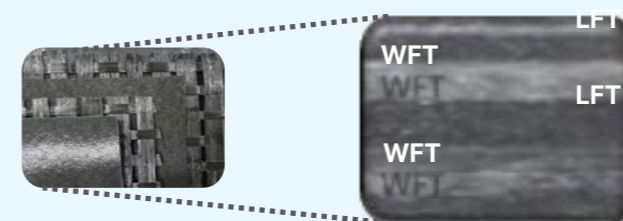


### High Strength : Collision Test



No product damage after collision test

### WLFT Composition layer



## PRODUCT DATA

WLFT-5118BL (High Impact/Modulus)					
Properties	Specific Gravity	TS at yield	Impact Strength	High-velocity Impact	HDT
Test Method	ASTM D792	ASTM D638	ASTM D256	ASTM D256	ASTM D648
Unit	-	MPa	J	J	°C
Result	1.19	216	460	30	160



Bumper Back Beam



Battery Pack



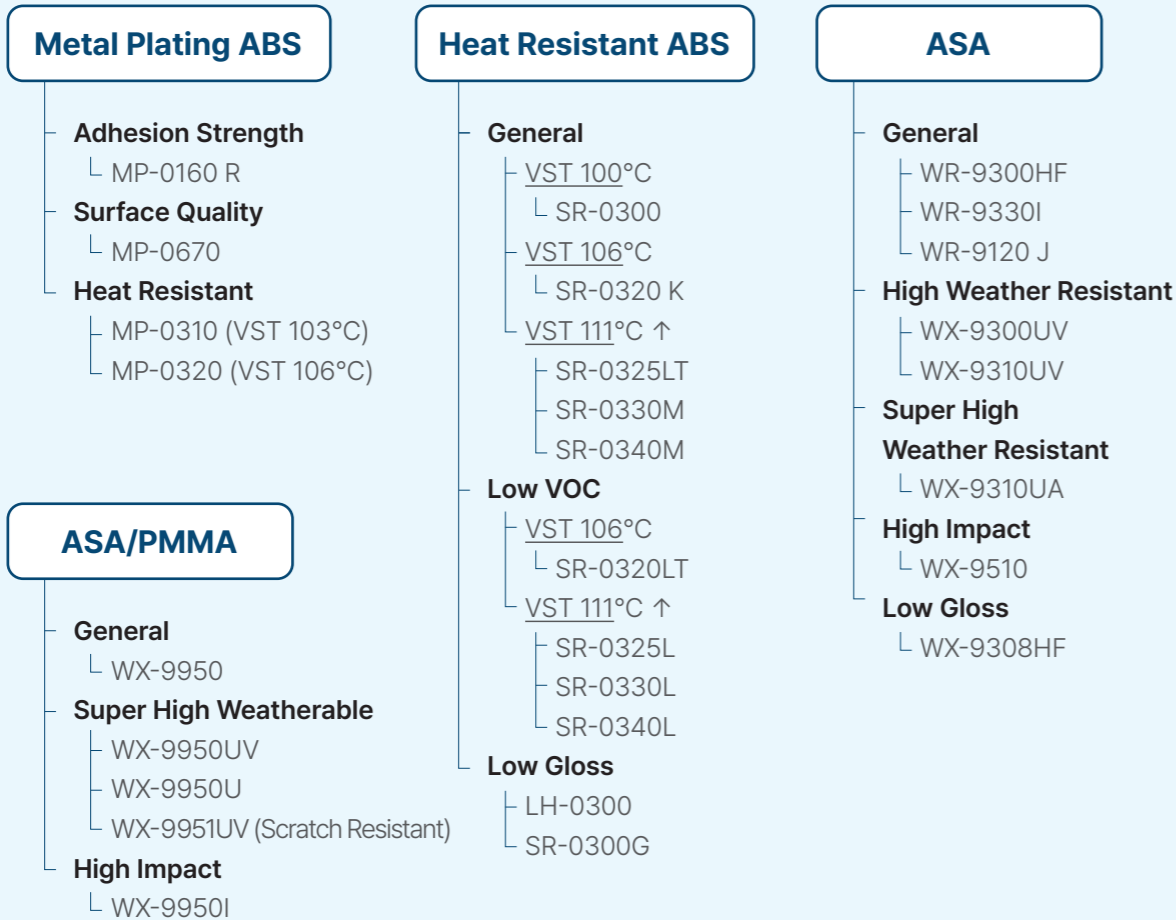
IP Garnish



**starex<sup>®</sup> ABS & ASA**



**PRODUCT LINE-UP**



\*For inquiries about anti-microbial, eco-friendly materials, please contact us.

# High Adhesion & Surface Quality Metal Plating ABS

**Key Features**

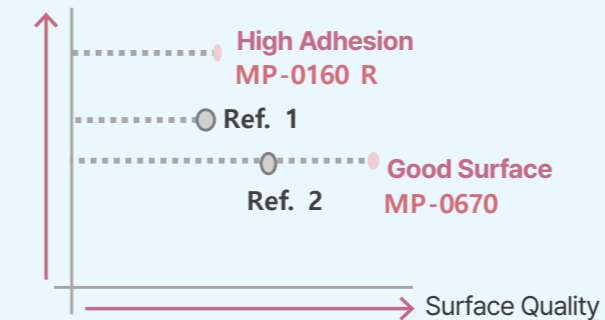
- Adhesion Strength
- Surface Quality
- Quality Stability **A<sup>+</sup>**

**APPLICATIONS** · Front Grille

**CHARACTERISTICS**

**Metal Plating**

Adhesion Strength



**Metal Plating Specimen - Cross Section**

[ Well dispersed rubber and quality consistency ]

Morphology	Unevenly dispersed	Well dispersed
Dispersion Ability	Bad	Good
Surface Quality	Bad	Good

**PRODUCT DATA**

Properties	Test Method	Unit	MP-0160 R	MP-0670
			High Adhesion	High Surface Quality
Specific Gravity	ISO 1183	-	1.04	1.04
MI	ISO 1133(200°C,5kg)	g/10min	1.5	2.3
TS at yield	ISO 527	MPa	49	51
Impact Strength	ISO 180 1A (23°C)	KJ/m <sup>2</sup>	26	27
HDT	ISO 75A-2(1.8MPa)	°C	80	75



Front Grille



Front Grille

# Heat Resistant ABS \_ Low Odor & Gloss

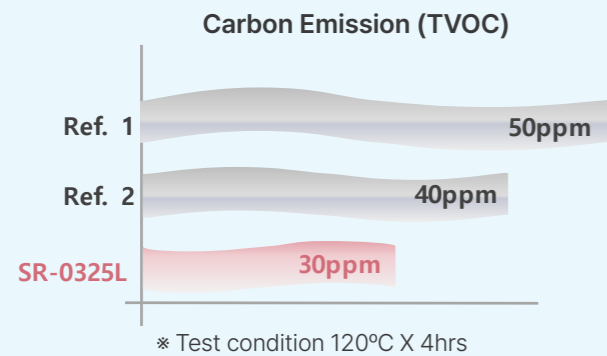
## Key Features



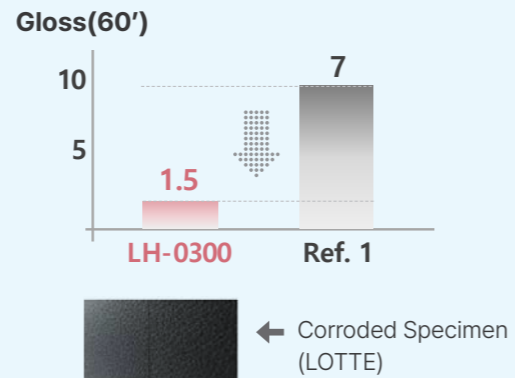
**APPLICATIONS** · Center Console · Window Switch Panel · Door Module

## CHARACTERISTICS

### Quality of Metal Plating



### Gloss : Corrosion Surface Comparison



## PRODUCT DATA

Properties	Test Method	Unit	SR-0325L	LH-0300
			Low TVOC	Low Gloss
Specific Gravity	ISO 1183	-	1.06	1.04
MI	ISO 1133(200°C,5kg)	g/10min	8	10
TS at yield	ISO 527	MPa	50	38
Impact Strength	ISO 180 1A (23°C)	KJ/m <sup>2</sup>	13	16
HDT	ISO 75A-2(1.8MPa)	°C	92	80



Center Console



Window Switch Panel



Door Module

# General/High Weatherable ASA

## Key Features



**APPLICATIONS** · Front Grille · Outside Mirror · Spoiler

## CHARACTERISTICS

### Weatherability

Grade	Color	OEM (Test Method)	Weather-ability
WX-9300UV	K22914	Ford (ASTM D7869)	Gray scale 4 (2,250hr)
WX-9310UV	K23292	BMW (ISO 4892)	dE 2.0 (1,500hr)
WX-9310UA	K22715	VW (PV-3929, PV-3930 2 Cycle)	Gray scale 4 (3,200hr)

### Surface Quality

	General ASA	LOTTE ASA
Concept		
Appearance		

## PRODUCT DATA

Properties	Test Method	Unit	WX-9300UV	WX-9310UV	WX-9310UA
			General, High Weather Resistant	Semi-heat Resistant, High Weather Resistant	Semi-heat Resistant, Super High Weather Resistant
Specific Gravity	ISO 1183	-	1.08	1.08	1.08
MI	ISO 1133 (200°C,5kg)	g/10min	10	6	7
TS at yield	ISO 527	MPa	47	49	49
Impact Strength	ISO 180 1A (23°C)	KJ/m <sup>2</sup>	12	14	14
HDT	ISO 75A-2 (1.8MPa)	°C	77	78	80



Front Grille



Spoiler

# High Gloss ASA/PMMA

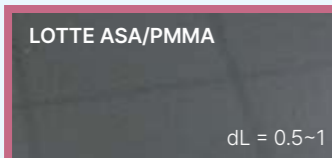
## Key Features



**APPLICATIONS** · Front Grille · Pillar · Exterior Garnish

## CHARACTERISTICS

### Scratch Resistance



### Weatherability

Grade	Color	OEM (Test Method)	Weather-ability
WX-9950UV	K24948	GM (SAE J 2527)	dE : 1.2 (4,500KJ)
WX-9950U	K25600	BMW (ISO 4892)	dE 1.6 (4,800hr.)
WX-9951UV	K24948	Ford (ASTM D7869)	dE : 1.3 (4,500KJ)

## PRODUCT DATA

Properties	Test Method	Unit	WX-9950UV	WX-9950I	WX-9950U	WX-9951UV
			High Colorability	High Impact	Scratch Resistant	High Colorability, Scratch Resistant
Specific Gravity	ISO 1183	-	1.16	1.10	1.15	1.15
MI	ISO 1133 (220°C,10kg)	g/10min	5	6	5.5	6
TS at yield	ISO 527	MPa	65	50	52	58
Impact Strength	ISO 180 1A (23°C)	KJ/m <sup>2</sup>	4	11	7	5.5
HDT	ISO 75A-2 (1.8MPa)	°C	77	81	75	75



Front Grille



Pillar



# INFINO® PC, PC Alloys & EP

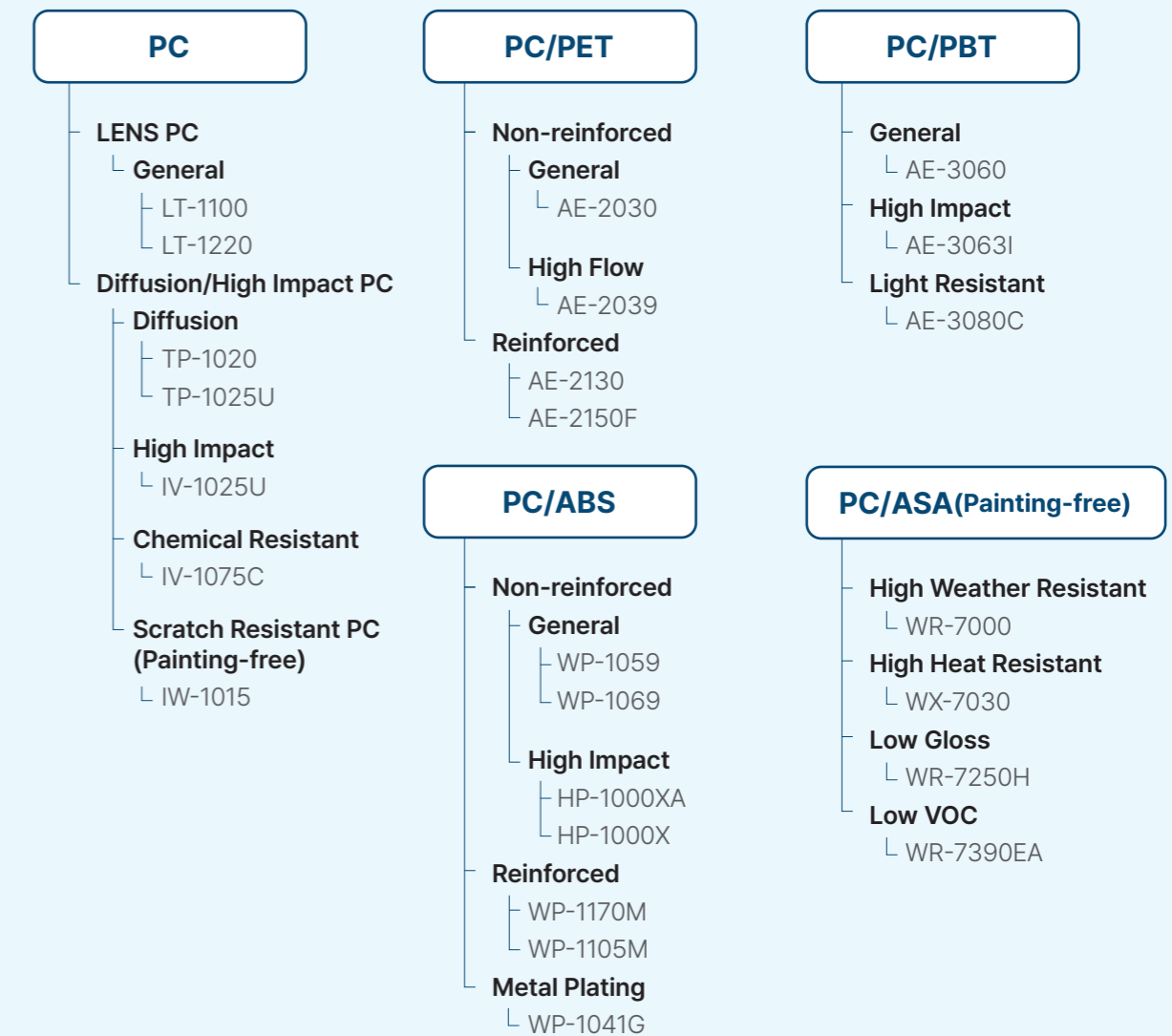


Anti-microbial



Eco-friendly (Recycled/Bio)

## PRODUCT LINE-UP



\* For inquiries about anti-microbial, eco-friendly materials, please contact us.

# Lens PC

## Key Features

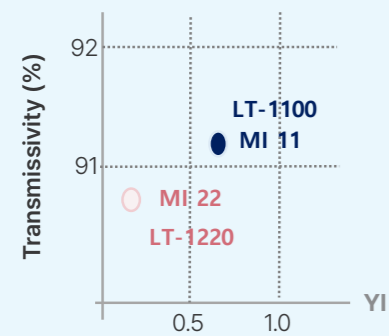


## APPLICATIONS

- Head/Fog Lamp · Lens & Bezel
- Rear lamp Reflector · Interior Garnish

## CHARACTERISTICS

### Transmissivity



## PRODUCT DATA

Properties	Test Method	Unit	LT-1100	LT-1220
Specific Gravity	ISO 1183	-	1.2	1.2
MI	ISO 1133 (300°C, 1.2kg)	g/10min	11	22
TS at yield	ISO 527	MPa	64	64
Impact Strength	ISO 180 1A (23°C)	KJ/m <sup>2</sup>	80	65
HDT	ISO 75A-2 (1.8MPa)	°C	125	123

# Diffusion/High Impact PC

## Key Features

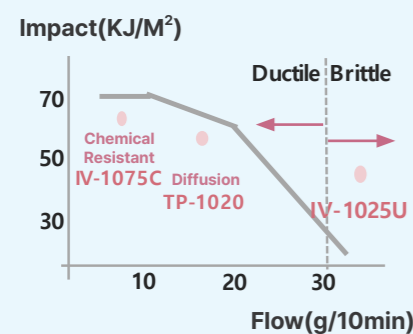


## APPLICATIONS

- Door garnish
- HVAC Overlay · Button

## CHARACTERISTICS

### Ductile-Brittle Transition



## PRODUCT DATA

Properties	Test Method	Unit	TP-1020	IV-1075C	IV-1025U
			Diffusion	Chemical Resistant	High Flow
Specific Gravity	ISO 1183	-	1.19	1.19	1.19
MI	ISO 1133 (300°C, 1.2kg)	g/10 min	20	7	33
TS at yield	ISO 527	MPa	59	59	59
Impact Strength	ISO 180 1A (23°C)	KJ/m <sup>2</sup>	53	62	47
HDT	ISO 75A-2 (1.8MPa)	°C	124	118	117
Light Resistance	84MJ, 1T	-	-	dE 2.0 ↓	dE 2.0 ↓



# PC/ABS\_Reinforced, Metal Plating

## Key Features



## APPLICATIONS

- Reinforced** · Cowl Top Cover · Center Garnish · Spoiler
- Metal Plating** · Front Grille · Wheel Cover · Outside Door Handle

## CHARACTERISTICS

### Reinforced PC/ABS : Linear Expansion Coefficient

ASTM E831		WP-1105M	WP-1170M
CLTE -40~40°C	Flow	4.90E-05	4.20E-05
	xFlow	6.00E-05	6.00E-05

### Metal Plating PC/ABS : Metal Plating Performance

	WP-1041G	Ref.1	Ref.2
Schematic Diagram			
	<b>Regularly etched</b> - Matrix SAN composition optimize - g-ABS dispersion and content control	<b>Incompletely etched</b> - Rubber dispersion is not regular in SAN phase	<b>Under etched</b> - Matrix SAN composition is not optimized
Properties	Pit 1.7 Adhesion 415	Pit 6.2 Adhesion 387	Pit 4.5 Adhesion 250

\* Cr<sup>6+</sup> Free Solution Secure

## PRODUCT DATA

Properties	Test Method	Unit	WP-1105M	WP-1170M	WP-1041G
			PC/ABS/MF		PC/ABS
			Dimensional Stability	High Surface Quality	Metal Plating
Specific Gravity	ISO 1183	-	1.25	1.28	1.09
MI	ISO 1133	g/10min	22 (260°C, 5kg)	12.5 (260°C, 5kg)	31 (250°C, 10kg)
TS at yield	ISO 527	MPa	64	62	47
Impact Strength	ISO 180 1A (23°C)	KJ/m <sup>2</sup>	12	16	45
HDT	ISO 75A-2 (1.8MPa)	°C	120	121	101



# PC/Polyester

## Key Features



## CHARACTERISTICS

### PC/PET : Dimensional Stability

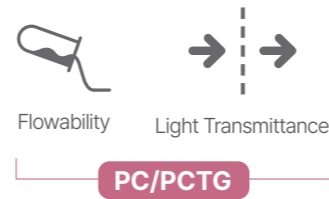
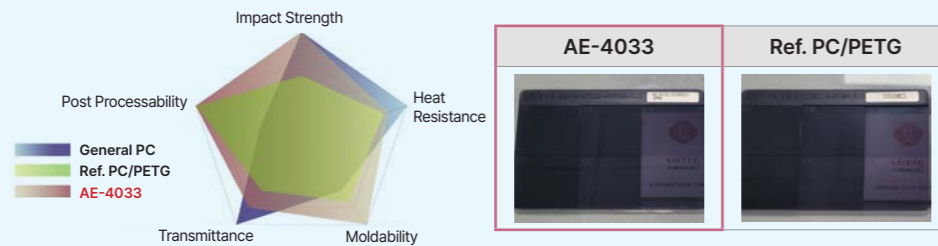
ASTM E831		WP-1105M	AE-2130	WP-1170M
CLTE -25~50°C	Flow	8.3E-0.5	6.9E-0.5	4.3E-05
	xFlow	8.9E-0.5	8.7E-0.5	6.1E-05

### PC/PBT : Chemical Resistance

General PC/ABS		Crack
PC/PBT		Good Condition

\* ESCR 2.1% strain, ASTM D638 type I fabric deodorize

### PC/PCTG : Low Melting Point, Light Transmittance



## APPLICATIONS

### PC/PET

- Front Grille
- Spoiler
- Air Deflector

### PC/PBT

- Door Handle
- Interior Garnish
- Air Vent

### PC/PCTG

- Interior Garnish

# Painting-free PC, PC/ASA

## Key Features



## APPLICATIONS

- Front Grille · Spoiler · Pillar
- Body Panel · Exterior Garnish
- Overhead Console · Roof Rack
- IP Garnish

## CHARACTERISTICS

### Weatherability, Light Resistance

Properties	Products	Grade	OEM(Color)	Spec	Results
Weatherability	PC	IW-1015	GM(ALL)	SAE J 2527/1960(3,500KJ), dE < 3	1.7
	PC/ASA	WR-7000	FCA(GXH), GM(848)	SAE J 2527/1960(2,500KJ), dE < 3	2
		WX-7030	FIAT(ALL)	FIAT 50451(1,500hr), dE < 3	2
Light Resistance	PC	IW-1015	HKMC(ALL)	MS210-05 (84MJ), dE < 2	0.2
	PC/ASA	WR-7250H			1

### Scratch Resistant (IW-1015)

		Erichsen (10N)	Mar (Cotton)
General PC	dL 8.0		
IW-1015	dL 3.5		

## PRODUCT DATA

## PRODUCT DATA

Properties	Test Method	Unit	AE-2030	AE-2150F	AE-3060	AE-3080C	AE-4033
			PC/PET		PC/PBT		PC/PCTG
			Metal Plating	Metal Plating, High Modulus	High Impact	Chemical Resistant	Semi-transparent
Specific Gravity	ISO 1183	-	1.2	1.35	1.2	1.19	1.2
MI	ISO 1133	g/10min	22 (260°C, 5kg)	30 (260°C, 5kg)	10 (250°C, 5kg)	15 (260°C, 5kg)	35 (300°C, 1.2kg)
TS at yield	ISO 527	MPa	54	70	60	55	54
Impact Strength	ISO 180 1A (23°C)	KJ/m <sup>2</sup>	59	5	60	60	50
HDT	ISO 75A-2 (1.8MPa)	°C	97	115	86	95	106



Front Grille



Spoiler



Air Vent



Spoiler



Overhead Console

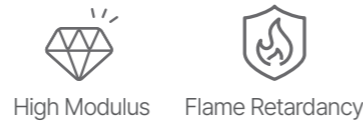


IP Garnish

Properties	Test Method	Unit	WR-7000	WX-7030	WR-7250H	IW-1015	
			PC/ASA				PC/ABS
			High Weather Resistant	High Heat Resistant	Loss Gloss	Scratch Resistant	
Specific Gravity	ISO 1183	-	1.15	1.16	1.16	1.18	
MI	ISO 1133 (250°C, 10kg)	g/10min	23	38	40	17	
TS at yield	ISO 527	MPa	53	60	57	65	
Impact Strength	ISO 180 1A (23°C)	KJ/m <sup>2</sup>	40	50	55	20	
HDT	ISO 75A-1 (1.8MPa)	°C	98	113	105	110	



# Flame Retardant Line-ups for EV Battery



## PRODUCT LINE-UP

**Popelen**

### Compound PP

- PP
  - EFP-1027 (1.5T V0)
- PP/GF
  - EFP-4417 (1.5T V0)
  - EFP-4617 (1.5T V0)

**INFINO**

### PC

- PC
  - EFC-5087 (1.5T V0)
  - EFC-5048 (0.8T V0)

### PC Alloy

- PC/ABS
  - EFC-1007
- PC/ABS/GF
  - EFC-1157 (1.5T V0)
  - EFC-1206 (3.0T V0)
  - EFC-1207 (1.5T V0)

### EP

- PA/GF
  - EFE-9308 (0.8T V0)
  - EFE-7358 (0.8T V0)
- PA/MF
  - EFE-9157M (1.5T V0)
- mPPE/GF
  - EFE-8107 (1.5T V0)
  - EFE-8108R (T/R 0.8T V0)
  - EFE-8205 (0.8T V1)
- mPPE/MF
  - EFE-8107B (1.5T V0)
  - EFE-8108B (0.8T V0)

\* For inquiries about anti-microbial, eco-friendly materials, please contact us.

# Compound FR PP for EV Battery

## Key Features



High Modulus



Flame Retardancy



Heat Resistance



Environmental Stress Crack Resistance (ESCR)



Electrical insulation

High Modulus, Flame Retardancy

Environmental Resistance

## APPLICATIONS

EV Battery · Battery · Module(EV, HEV)  
 Details · End/Side Plate · Busbar Holder · Module Divider



Battery Module



End/Side Plate



Busbar Holder



Module Divider

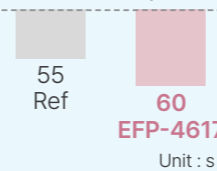
## CHARACTERISTICS

### High Modulus, Flame Retardancy

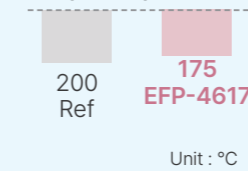


Torch & Grit

Breach Time@1,200°C



Sample Temp. @Breach

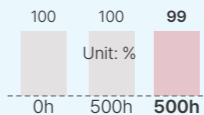


### Environmental Resistance

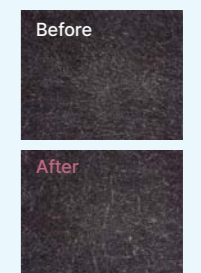
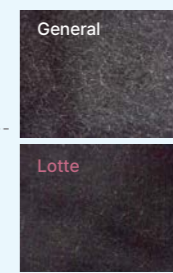
[Heat Resistance@150@150°C]

[Environmental Stress Crack Resistance]

[Tensile Strength at yield residual ratio]



After 1000hr

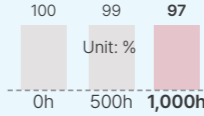


Before

After

EC:EMC:DEC=25:45:30 v%

[Impact Strength residual ratio]



## PRODUCT DATA

Properties	Test Method	Unit	EFP-1027	EFP-4417	EFP-4617
			Non Filler	Flame Retardant	Flame Retardant, High Modulus
GF	-	%	-	20	30
Flammability	UL94	1.5mm	V-0	V-0	V-0
Melt Flow	ISO 1133 (230°C, 2.16kg)	g/10min	12	9	8
Specific Gravity	ISO 1183	-	1.02	1.18	1.29
TS at yield	ISO 527 (5mm/min)	MPa	15	75	87
Flexural Strength	ISO 178 (2mm/min)	MPa	28	122	140
Flexural Modulus	ISO 178 (2mm/min)	MPa	1,300	5,600	7,600
Impact Strength	ISO 180 1A (23°C)	kJ/m <sup>2</sup>	5	7	8
HDT	ISO 75A-2 (1.8MPa)	°C	63	142	147

# FR PC for EV Battery

## Key Features



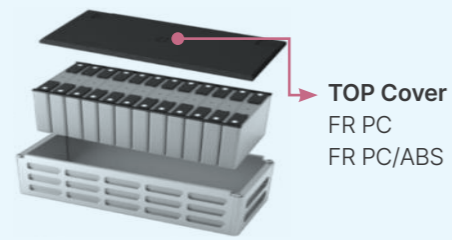
**APPLICATIONS** · Battery Module · Top Cover · Bike Motor Cover · Charger

## CHARACTERISTICS

### High Impact/Surface Quality

Plane test result	Appearance

### Top Cover (Prismatic Battery)



## PRODUCT DATA

Properties	Test Method	Unit	EFC-5087	EFC-5048
			Flame Retardancy, Painting-free(UV)	Flame Retardancy, High Heat Resistance
Flammability	UL94	1.5mm	V-0	V-0* (0.8T)
Specific Gravity	ISO 1183	-	1.19	1.2
TS at yield	ISO 527	MPa	60	60
Flexural Strength	ISO 178	MPa	85	70
Flexural Modulus	ISO 178	MPa	2,000	2,100
Impact Strength	ISO 180 1A (23°C)	KJ/m <sup>2</sup>	65	-
HDT	ISO 75A-2 (1.8MPa)	°C	124	125

# FR PC/Alloy for EV Battery

## Key Features



**APPLICATIONS** · Cell Tray for Production · Insulation Sheet · Cell Holder · Charger

<b>Insulation Sheet</b>	 Insulation Sheet
<b>Busbar, End Plate (Pouch Battery)</b>	 Busbar Frame Assay FR PC/ABS End Plate Assay FR PC/ABS
<b>Cell Holder (Cylindrical Battery)</b>	 Cell Holder FR PC FR PC/ABS

## PRODUCT DATA

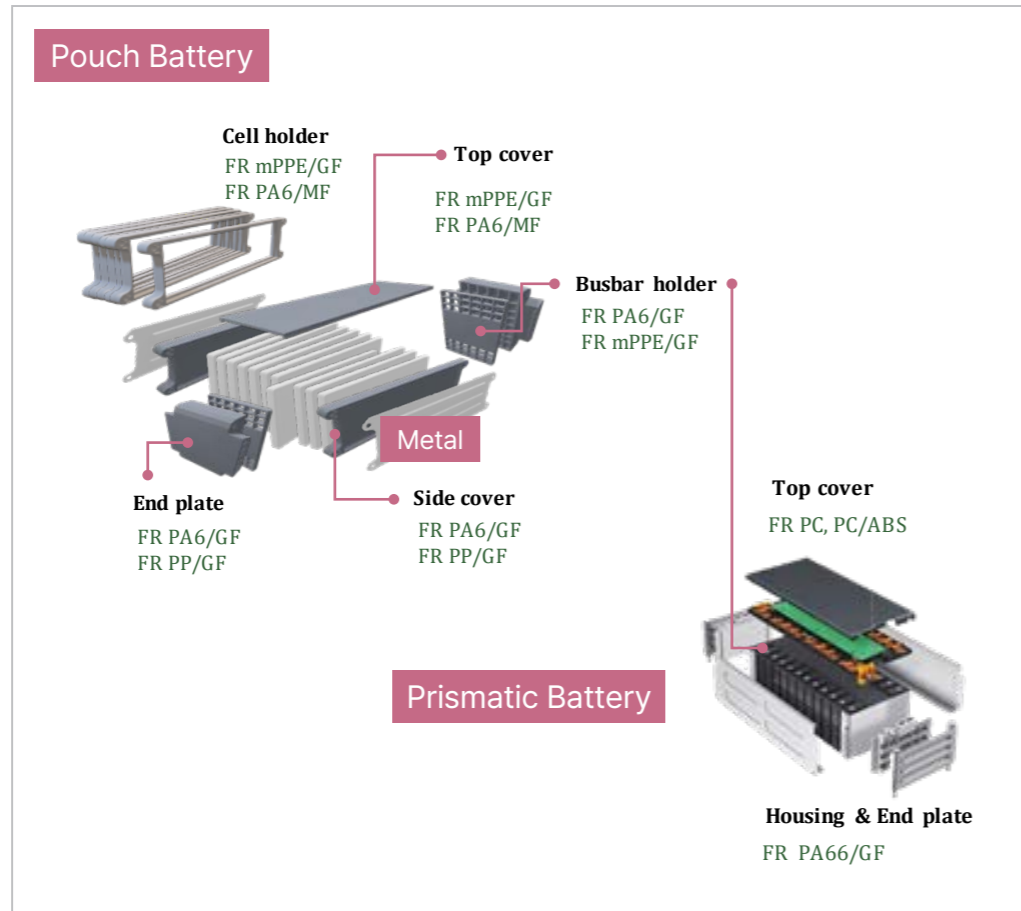
Properties	Test Method	Unit	EFC-1157	EFC-1206	EFC-1207
			Flame Retardancy, High Modulus		
GF	-	%	15	20	20
Flammability	UL94	1.5mm	V0	V-0* (0.8T)	V-0
Specific Gravity	ISO 1183	-	1.28	1.34	1.34
TS at yield	ISO 527	MPa	90	85	120
Flexural Strength	ISO 178	MPa	120	120	160
Flexural Modulus	ISO 178	MPa	4,800	5,500	6,000
Impact Strength	ISO 180 1A (23°C)	KJ/m <sup>2</sup>	5	4	9
HDT	ISO 75A-2 (1.8MPa)	°C	88	107	125

# FR EP for EV Battery

## Key Features



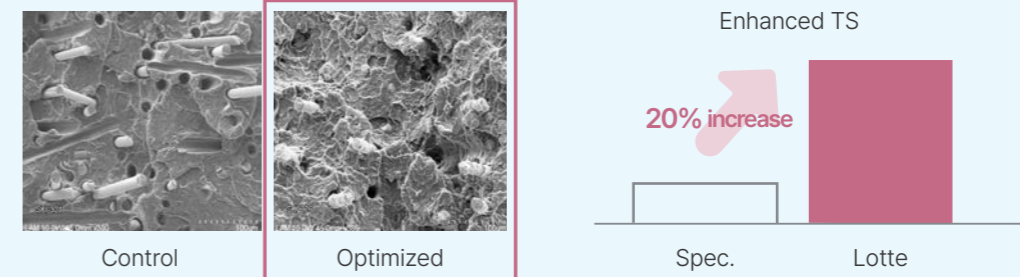
**APPLICATIONS** · Battery Module Housing · Busbar Holder · Separator



	Cell holder	Top cover	Side cover	End plate	Busbar holder
<b>FR</b>	+++	+++	+++	+++	+++
<b>Tensile strength</b>	++	+	+++	+++	+++
<b>Thermal stability</b>	++	+	+++	+++	+++
<b>Dimensional stability</b>	+++	+++	+	+	+
<b>Electrolyte resistance</b>	+++	+	+++	+++	+++
<b>CTI</b>	+	+	+++	+++	+++

## CHARACTERISTICS

### High Modulus, Dimensional Stability



### Flame Retardancy



## PRODUCT DATA

Properties	Test Method	Unit	EFE-9308	EFE-7358	EFE-9157M
			PA6/GF	PA66/GF	PA6/MF
GF	-	%	30	35	15(MF)
Flammability	UL94	-	0.8T V0	0.8T V0	1.5T V0
Specific Gravity	ISO 1183	-	1.43	1.448	1.28
TS at yield	ISO 527	MPa	147	157	40
Flexural Strength	ISO 178	MPa	235	240	75
Flexural Modulus	ISO 178	MPa	10,100	10,400	3,400
Impact Strength	ISO 180 1A (23°C)	KJ/m <sup>2</sup>	10	8	3
HDT	ISO 75A-2 (1.8MPa)	°C	202	230	78

Properties	Test Method	Unit	EFE-8107	EFE-8205	EFE-8107B	EFE-8108B
			PPE/MF			
			Flame Retardancy	Flame Retardancy, High Modulus	Flame Retardancy, Dimensional Stability	Flame Retardancy, Dimensional Stability
GF	-	%	10	20	10	10
Flammability	UL94	-	1.5T V0	0.8T V1	1.5T V0	0.8T V0
Specific Gravity	ISO 1183	-	1.16	1.24	1.15	1.15
TS at yield	ISO 527	MPa	90	110	60	60
Flexural Strength	ISO 178	MPa	140	160	100	95
Flexural Modulus	ISO 178	MPa	4,300	6,200	2,600	2,500
Impact Strength	ISO 180 1A (23°C)	KJ/m <sup>2</sup>	8	10	10	9
HDT	ISO 75A-2 (1.8MPa)	°C	105	120	105	105



# Performance Materials

## PRODUCT LINE-UP

**Lottmer**

TPE

### TPE-V (TPV)

Weather Resistant

└ HS-350DB

High Flow

└ HS-385AB

Heat & Oil Resistant

└ HX-064AB

### TPE-S (TPS)

High Flow

└ SE-050AB(S2)

Injection Adhesion (Over molding)

└ SH-660AB

\* For inquiries about anti-microbial, eco-friendly materials, please contact us.

# Lottmer TPE

## Key Features

Resilience (Rubber)

Processability (Thermoplastic Resin)

Weatherability

Light Resistance

## APPLICATIONS

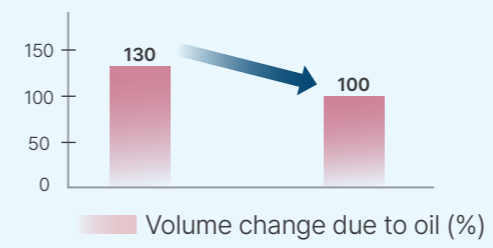
- Glass Run Channel
- Cowl Top Cover Strip
- HVAC Door Seal
- Door Curtain
- Car Mat
- Clamp Rubber
- Fuel Door Seal

## CHARACTERISTICS

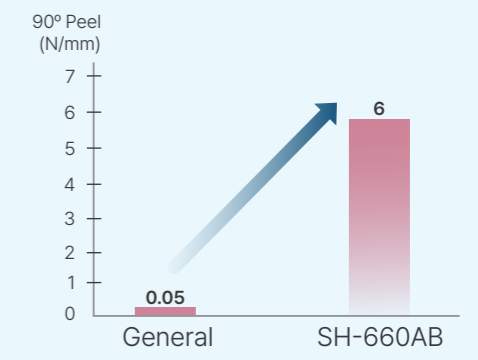
### Weatherability, Light Resistance

TEST		dE	
		Result	SPEC
내광	SAE J 2412	0.8	<3
내후	SAE J 1960	1.3	
Arizona	Duration 105,000 TNR Langleys	1.6	

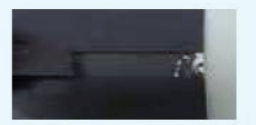
### Oil Resistance



### Injection Adhesion



· SH-660AB



· General (Peeled off)



## PRODUCT DATA

Properties	Test Method	Unit	HS-350DB	HS-385AB	HX-064AB	SE-050AB	SH-660AB
			Weatherability	Weatherability, Flowability	Heat & Oil Resistance	Flowability	PA Adhesion
Rockwell Hardness	ISO 868	[Shore A]	50 [Shore D]	85	70	50	60
Specific Gravity	ISO 1183	-	0.95	0.96	0.97	0.96	1.08
TS at yield	ISO 37	Kgf/cm <sup>2</sup>	145	80	66	55	40
Tensile Elongation	ISO 37	%	600	500	450	650	400
100% Tensile Point Stress	ISO 37	Kgf/cm <sup>2</sup>	-	48	28	15	-



Cowl Top Cover Strip



Car Mat



Fuel Door Seal

A global group creating a better life for all, **LOTTE** endeavors to realize this ambitious dream.



Change Today,  
Create Tomorrow

**MISSION**

We enrich people's lives by  
Providing superior products  
And services that  
Our customers love  
Ans trust.

**VISION**

Lifetime  
**Value**  
Creator

Business Portfolio



LOTTE Chemical's technologies help to enrich our daily lives.

Field of Business



**Basic Chemicals**

Basic/Intermediate  
Petrochemicals  
Polymer  
Monomer

Ethylene, Propylene, BD, SM, OX, C5  
PE, PP, PET  
EO/EG/GE, EOA, PIA/PTA/MMA

**Advanced Materials**

High Performance  
Plastic Materials

**storex** Styrene & general product ABS, ABS Alloy, ASA, PP  
**INFINO** Engineering plastics PC, PC Alloy & High Performance EP  
**Performance** PP Compound, TPE, Modified adhesive resin, LFT materials

Construction  
Materials

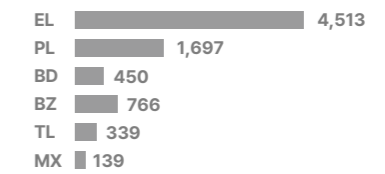
Acrylic solid surface, Engineered stone, Porcelain surface

Capacity

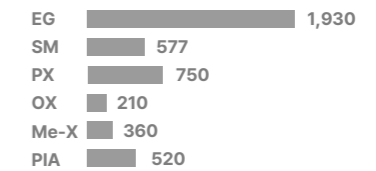
(Unit : KTA)



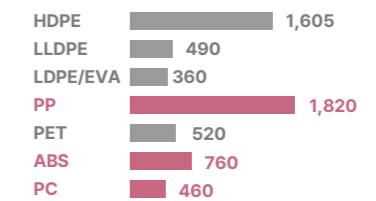
**BASIC CHEMICALS**



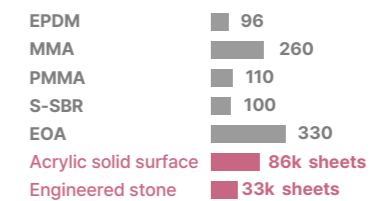
**MONOMER**



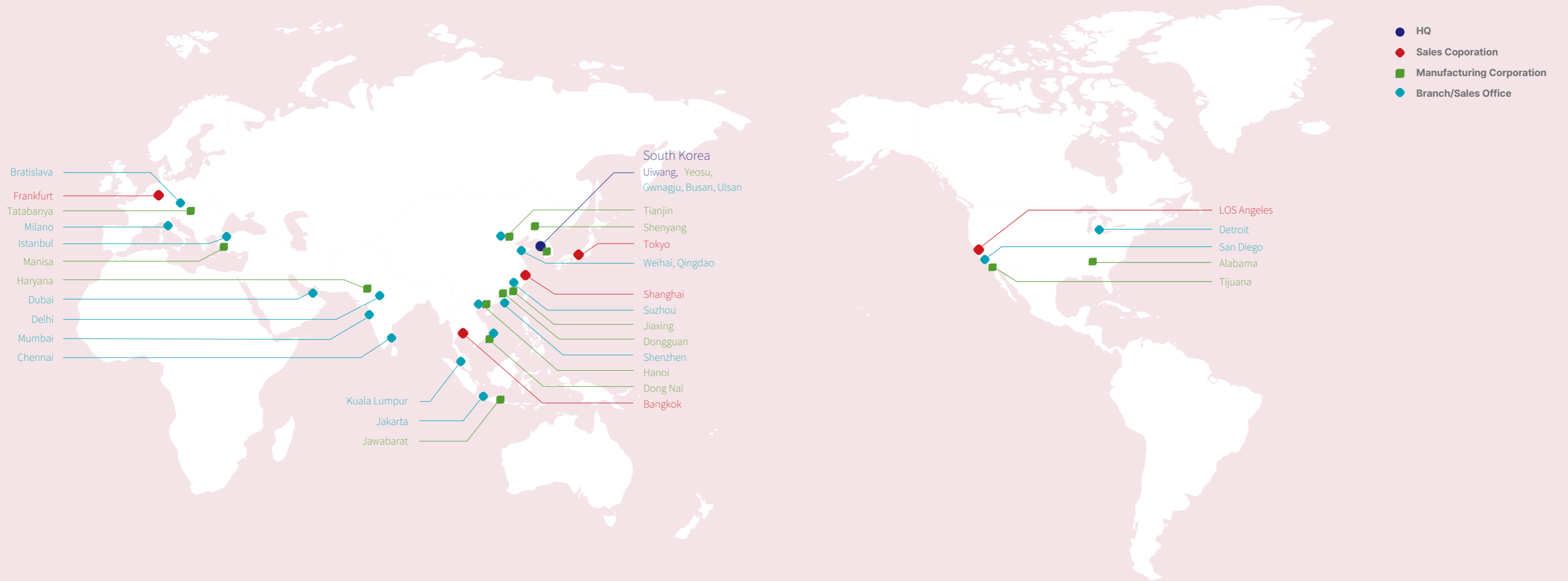
**POLYMER**



**SPECIALTY**



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