

---

**mitsui PLASTICS. INC**  
**SUSTAINABLE &**  
**NEW AUTOMOTIVE**  
**MATERIALS**



MITSUI & CO.

**MITSUI PLASTICS, INC.**

[www.mitsuiplastics.com](http://www.mitsuiplastics.com)



---

# **ON THE CUTTING EDGE OF SUSTAINABLE AUTOMOTIVE TECHNOLOGIES & SPECIALTY PRODUCTS**

**SPECIALTY PRODUCTS**

**POST-CONSUMER RECYCLED (PCR) MATERIAL**

**POST-INDUSTRIAL RECYCLED (PIR) MATERIAL**

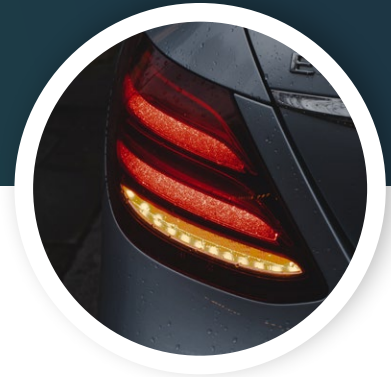
**BIO-BASED POLYCARBONATE (PC)**

**BIO-BASED POLYURETHANE (PU)**

**CARBON SEQUESTERING MATERIAL – POLYKETONE (PK)**



## SPECIALTY PRODUCTS



### EDGE GLOW

- This is a unique light Transmitting Polycarbonate (PC) or PMMA, that allows light to be transmitted through the material and produce bright flashy edging on the material.
- **Some applications include:**
  - Instrument Panels
  - Door Sill Plate
  - Dashboard Trim
  - Bezel Ring
  - Tail lights
- This specialty material can come in many colors with light transmitting capabilities, such as: Red, blue, green, purple, pink, yellow, orange, and many more, with options for development.

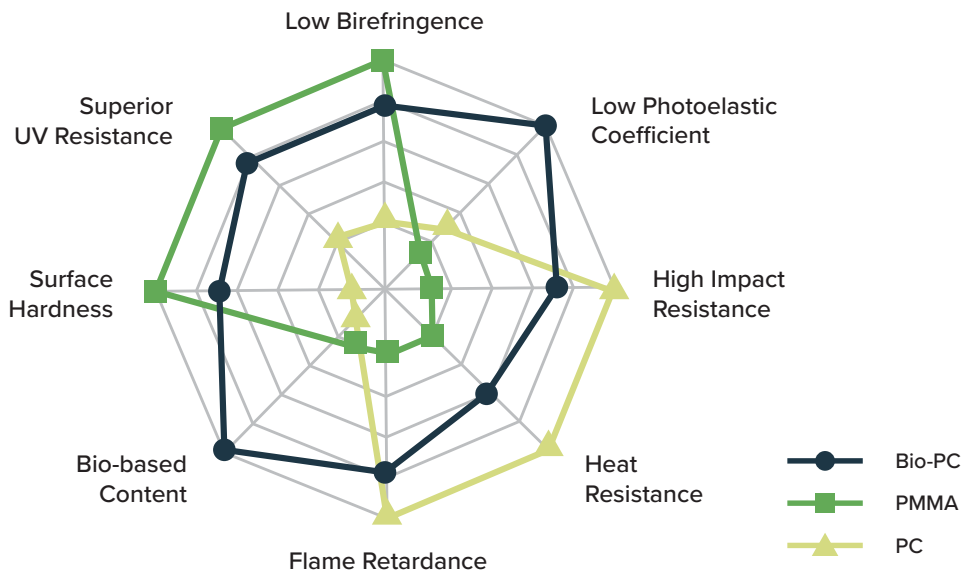
### SILOXANE COPOLYMER POLYCARBONATE (Si-PC)

- This high-strength Si-PC is used to provide advanced lighting solutions instead of conventional painting/plating.
- Can meet various colors and shades while allowing light to diffuse through the material.
  - Can be transparent, translucent (haze), or opaque.
- **Can be used on applications such as:**
  - Center Fascia
  - Buttons
  - Mood Lamp Cover
  - Translucent Dashboard
  - Light Translucent Grill

### PMMA LIGHTING

- This high-transparency PMMA has excellent chemical resistant, weatherability, and boasts strong surface hardness for interior/exterior lighting applications, and other trim applications.
- **Some applications include:**
  - Light Guide Lens
  - Rear Combination Lamps
  - Turn Signal Trim
  - Cluster Window Lens
  - Door Pillar Garnish
  - Front Grille
  - Ambient Mood Lighting
- This PMMA can come in a variety of colors, with options to glitter the material of various applications.

# BIO-BASED POLYCARBONATE (PC)



**56%**  
**BIO CONTENT**

- **This Polycarbonate boasts approximately 56% bio-content from its feedstock Isosorbide, which is derived from plant-based glucose.**
- **Key Features:**
  - Low Birefringence
  - Low VOCs
  - Great Surface Hardness
  - Great UV Resistance
  - Improved Melt Flow Properties
  - Minimized Friction In-Mold
- **This Bio-PC is used in many glass substitution applications because of its highly optical characteristics.**
- **Other Applications include:**
  - HUD Screens
  - Center Fascia Displays
  - Dashboard Screens
  - SCC Cover
  - Light Guide Lens





## POST-CONSUMER RECYCLED (PCR) MATERIAL

**20-30%  
RECYCLED  
CONTENT**

- This post-consumer recycled material comes as drop-in replacements for Polypropylene (PP) and Thermoplastic Polyolefins (TPO) applications.
- This PCR material maintains key technical specification while containing 20-30% recycled content (depending on application).
- Vast color options with in-house color capabilities.
  - Speckled options ready for exterior applications.
  - Speckled options in development for interior applications.

APPLICATION	TALC CONTENT (%)	PCR CONTENT (%)
Fascia, Exterior Trim (Mold-In-Color or Paint)	16	30
Fascia, Exterior Trim (Paint)	16	30
Interior Garnish Trim (Mold-In-Color)	10	20
Interior Garnish Trim (Mold-In-Color)	20	30



## POST-INDUSTRIAL RECYCLED (PIR) MATERIAL

**>75%**  
**PIR CONTENT**

---

**GREATLY REDUCES  
THEIR GLOBAL  
WARMING POTENTIAL**

- **This post-industrial recycled material comes as a drop-in replacement for:**
  - ABS (Acrylonitrile Butadiene Styrene)
  - PC-ABS (Polycarbonate/Acrylonitrile Butadiene Styrene)
  - Nylon or:
    - PA6 (Polyamide 6)
    - PA66 (Polyamide 66)
- All grades maintain their key technical specifications while having a **PIR content of >75%**, which in turn **greatly reduces their global warming potential** upon manufacturer.

MATERIAL	CURRENT APPLICATION	PIR CONTENT (%)		GWP (KG CO <sub>2</sub> EQ)	
		VIRGIN	RECYCLED	VIRGIN	RECYCLED
ABS	Door Panels, Armrests, Bumpers, Rear Spoilers, Lamp Brackets	0	>80	>3.41	<2.05
PC-ABS	Center Console, Glove Box, Dashboard, Decorative Strips	0	>75	>3.87	<2.32
PC-ABS GF	Back Injection of Wooden/ Aluminum Trim, Brackets, Functional Parts	0	>80	>3.52	<2.42
PA6	Engine Design Cover, Powertrain	0	>75	>5.74	<3.98
PA66	IP, Fan Frames, Headlight Actuator Housing	0	>75	>5.28	<3.59







## BIO-BASED POLYURETHANE (PU)

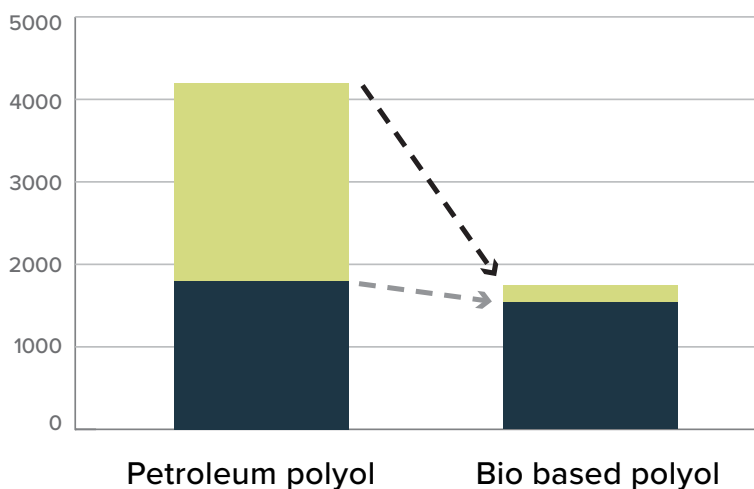
**PRODUCES  
50% LESS CO<sub>2</sub>**

---

**THAN PETROLEUM  
BASED PU**

- This bio-based Polyurethane is derived from non-edible plants, such as castor seeds.
- Bio-content in final products are approximately 15%.
- This bio-based PU only produces approximately 50% of the CO<sub>2</sub> exhaust that is produced by Petroleum-based PU.
- Seat cushions made from the Bio-PU notice increased riding comfort, and increased ball rebound.

### LIFE CYCLE ASSESSMENT



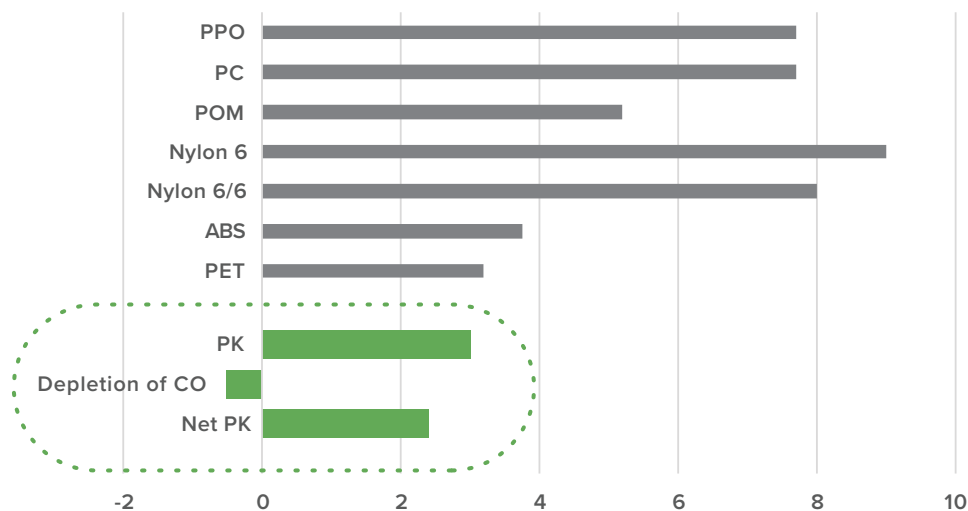
**QUANTITY OF CO<sub>2</sub>  
OUTBREAK OF THE  
BIO-POLYOL IS HALF  
OF THE PETROLEUM  
POLYOL.**

■ Thermal recycling  
■ Production process

## CARBON SEQUESTERING MATERIAL – POLYKETONE (PK)

- **Polyketone is a new green polymeric material composed of carbon monoxide and olefins, that utilizes carbon monoxide in its manufacturing.**
- Polyketone is utilized in many under the hood applications, and nylon replacement applications, with room for development in interior applications such as shifter modules, arm rests, and air ducts.
- Also frequently used in electrical applications, such as connectors, plugs, switches, and sockets.
- Polyketone is used in water filtration housing, as well as COVID-19 masks overseas.
- **Some of Polyketone's unique features include:**
  - Antimicrobial Properties:
    - 99.9% Reduction in Staphylococcus Aureus
    - 99.4% reduction in Escherichia Coli
  - Little To No VOCs
  - High Impact Strength
  - Anti-Squeak
  - High Chemical Resistance
  - Good Wear & Abrasion Behavior
  - Good Flame-Retardancy

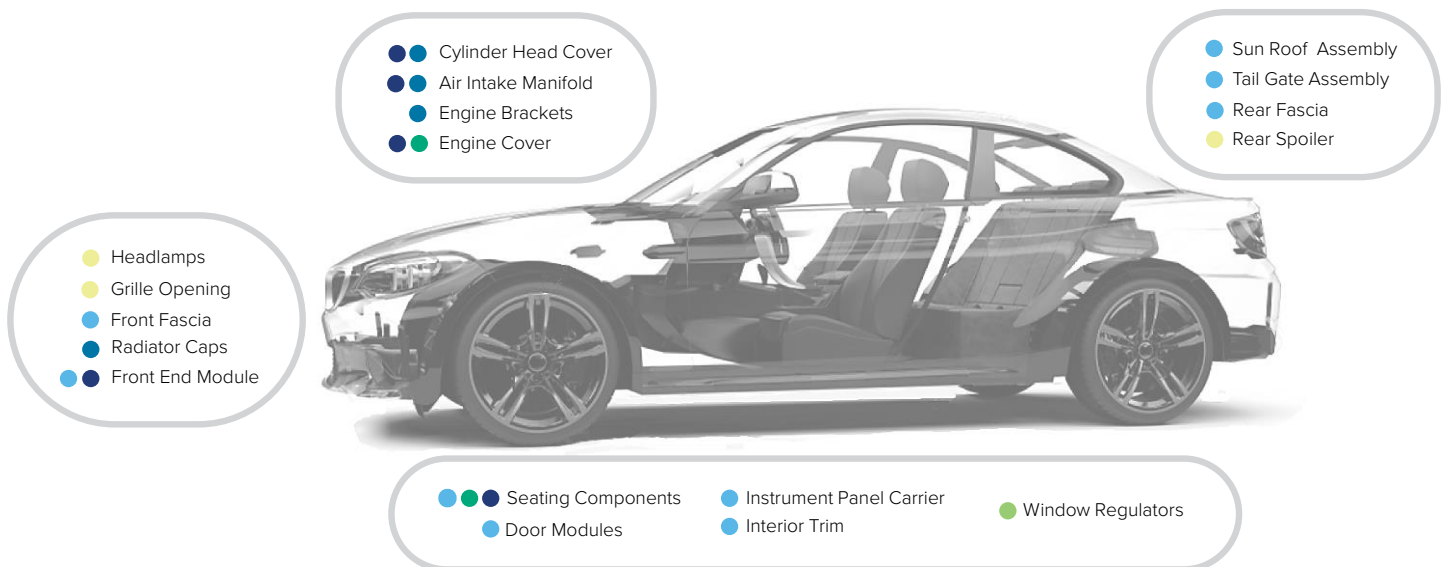
### CO<sub>2</sub> EMISSIONS BY MATERIAL (KG OF CO<sub>2</sub>/KG OF PLASTIC)





# 360° BUSINESS INNOVATION

## AUTOMOTIVE MATERIAL PORTFOLIO OVERVIEW



### PRODUCTS AND GRADES

- **PA6:** Glass Fiber, Mineral, Impact Modifier, High Heat, UV Stable
- **PA66:** Glass Fiber, Mineral, Impact Modifier, High Heat, Hydrolysis Resistance, UV Stable
- **PP:** Glass Fiber, Long Glass Fiber, Mineral Filled, TPO, Chopped Carbon Fiber, Impact Modifier, Chemical Foaming Agents, UV Stable
- **Polyurethane:** Full Range of Products, Specialty Grades for Engine Covers
- **POM, PBT, POK:** Glass Fiber, Long Glass Fiber, Mineral, Impact Modifier
- **ABS, ASA, PC, PMMA, and Blends:** Glass Fiber, Impact Modifier, Paintable, Plateable, UV Stable



**MITSUI PLASTICS, INC.**



## GLOBAL NETWORK



### **DETROIT OFFICE**

101 West Big Beaver Rd., Suite 820  
Troy, MI 48084

Phone: +1 (248) 205-6224

Email: [AutomotiveDEPIX@dg.mitsui.com](mailto:AutomotiveDEPIX@dg.mitsui.com)

[www.mitsuiplastics.com](http://www.mitsuiplastics.com)