



# PERFORMANCE FILMS

EXCLUSIVE STUDIO LAUNCH • INDIA

# Next-Gen Protection: Argotec PCU Material

Be the first studio partner in India to deliver ultra-premium USA Polycaprolactone Urethane Paint Protection Film to luxury car owners.



**First in India: Argotec PCU**

## **Lead the High-End Detailing Market**

Argotec (USA) is the global benchmark in master extruded aliphatic polyurethane film technology. By bringing Argotec Polycaprolactone Urethane (PCU) base material to India for the very first time, your studio gains an unshakeable competitive edge.

Offer your clients unmatched clarity, zero yellowing assurance, and ultimate self-healing resilience that standard TPU brands cannot match.



# PPF Material Science: PCU vs. Standard TPU & Argotec

A Technical Comparison of Polycarbonate Polyurethane vs Aliphatic TPU Backbones

Paint Protection Film

Polymer Chemistry

Material Performance

In the automotive Paint Protection Film (PPF) industry, **PCU (Polycarbonate Modified Polyurethane)** represents a next-generation material advancement over traditional **TPU (Thermoplastic Polyurethane)** and industry-standard base films like **Argotec** aliphatic TPU.

## 1. Molecular Chemistry & Backbone Architecture

The core structural distinction between standard TPU and PCU lies in the chemical polyol segment of the polymer chain.

### Standard Aliphatic TPU / PCL

Built using **Polycaprolactone Diol (PCL)** or polyether soft segments. While highly flexible and self-healing, ester (  $-C(=O)-O-$  ) and ether linkages remain vulnerable to cleavage when subjected to heat, environmental moisture, and UV radiation over time.

### PCU (Polycarbonate Polyurethane)

Replaces traditional PCL/polyether with **Polycarbonate Diol (PCDL)**. Incorporating rigid polycarbonate ring motifs into the soft segment dramatically increases thermal stability, bond energy, and chemical inertia.

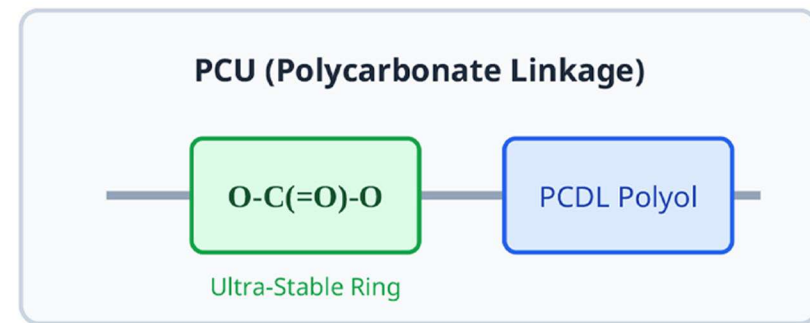
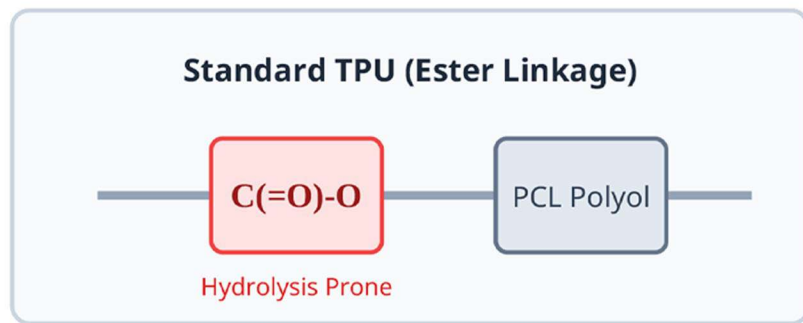


Figure 1: Comparison of ester backbone cleavage vulnerability in standard TPU versus the stable polycarbonate bond in PCU.

## 2. Key Scientific Performance Advantages of PCU

### A. Exceptional Hydrolysis Resistance

Standard TPU ester bonds react with atmospheric humidity under high temperature (hydrolysis), breaking down the long-chain polymer into shorter fragments. This causes physical yellowing, cloudiness, and film degradation. The polycarbonate linkage  $\text{-O-C(=O)-O-}$  in PCU exhibits significantly higher chemical stability against water intrusion, resisting damp-heat aging up to **3 times longer** than conventional TPU.

### B. Thermo-Oxidative & UV Aging Resistance

Under intense solar radiation and elevated bonnet temperatures, TPU backbones oxidize and embrittle. Polycarbonate soft segments possess superior thermal dissociation energy, ensuring that PCU retains optical clarity, tensile strength, and gloss even after extended exposure to temperatures exceeding  $120^{\circ}\text{C}$ .

### Accelerated Weathering Resistance (Gloss Retention Over Time)

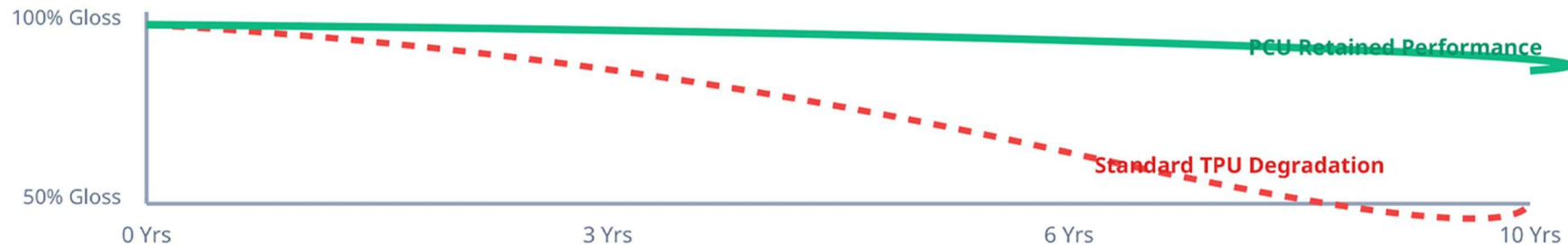


Figure 2: Relative degradation curve showing long-term gloss retention under UV & heat stress.

## C. High-Velocity Impact Absorption

By blending elastomeric polyurethane elasticity with rigid polycarbonate toughness, PCU provides up to **30% greater energy dissipation** against road gravel, stone chips, and high-speed debris than standard single-structure TPU.

## D. Surface Chemical & Stain Resistance

The compact molecular density of polycarbonate topcoats hinders deep penetration of non-polar pollutants like tree sap, bug splatters, acid rain, and bitumen. Water bead contact angles remain higher for longer periods.

## 3. How Argotec Material Fits In

**Argotec** (produced by Mativ / SWM) represents the industry gold-standard *raw aliphatic TPU film base* used by leading global PPF brands.

- **Argotec Aliphatic TPU:** Known for extreme optical clarity, uniform extrusion quality, and high stretchability during installation.

- **PCU vs. Argotec TPU:** While Argotec TPU is an elite standard aliphatic TPU base, **PCU is a material evolution** that integrates polycarbonate polyol chemistry into the film matrix to deliver extended outdoor longevity and harsh environment durability.

## 4. Comprehensive Material Comparison

| Property Parameter          | Standard Aliphatic / Argotec TPU        | Polycarbonate Polyurethane (PCU)           |
|-----------------------------|-----------------------------------------|--------------------------------------------|
| Soft Segment Backbone       | Polycaprolactone Diol (PCL) / Polyether | Polycarbonate Diol (PCDL)                  |
| Hydrolysis Endurance        | Good (5–7 Years)                        | Superior (10+ Years / High Humidity)       |
| Impact Chip Protection      | Standard elastomeric absorption         | +30% Higher Energy Dissipation             |
| UV & Heat Aging             | Gradual yellowing & loss of gloss       | Ultra-stable optical clarity               |
| Stretch & Workability       | Very Flexible / Easy Install            | Slightly stiffer backbone (requires skill) |
| Stain & Chemical Resistance | Moderate topcoat dependency             | Inherent high density barrier              |
| Target Application          | Daily vehicles (5-7 yr lifecycle)       | Luxury, supercars & extreme climates       |

**Summary Takeaway:** While Argotec and standard aliphatic TPU films offer excellent elasticity and healing capabilities for standard ownership lifecycles, PCU technology introduces polycarbonate molecular reinforcing units. This delivers superior resistance to weather aging, acid/stain resistance, and long-term hydrolysis stability for high-end applications.

# What is Argotec PCU Technology?

## Standard TPU / PVC Films

Traditional PPF uses basic aromatic TPU or low-grade polymers prone to yellowing under harsh tropical UV rays. They suffer from premature gloss degradation, hydrophobic loss, and difficult adhesive repositionability.

## Argotec PCU Material

Polycaprolactone Urethane (PCU) utilizes top-tier aliphatic aliphatic chains engineered in the USA. It offers maximum tear resistance, superior optical lay-flat smoothness, instant self-healing, and absolute clarity over time.



# Engineered for Indian Roads

## Extreme Weather Resistance

Indian driving conditions subject vehicles to intense UV radiation. monsoon mud. hard water spots, and heavy dust pollution.

Argotec PCWs robust cross-linked aliphatic molecular structure prevents discoloration. brittleness. and water mark etching. ensuring your studio's reputation remains untarnished.



# Product Specifications

# PCU-G75

| BASE MATERIAL    | THICKNESS                   | WATER CONTACT ANGLE                     |
|------------------|-----------------------------|-----------------------------------------|
| PCU Argotec      | 7.5mil/190pm                | >150°,Hydrophobic                       |
| GLUE             | TENSILE RATE                | ANTIAYELLOWING                          |
| USA              | 290%                        | ΔE<1                                    |
| SPECIFICATIONS   | -UV BLOCK RATE              | SELF HEALING                            |
| 1.52x15m         | >90%                        | Hear Activated Instant self healing     |
| STAIN RESISTAYCE | SURFACE GLOSS(60°)          | CHEMICAL RESISTANCE                     |
| PASS             | 101GU                       | Passed 72h acid & alkali immersion test |
| HEAT RESISTANCE  | ANTI-STONE CHIP PERFORMANCE | WARRANTY                                |
| PASS             | PASS                        | 15 Years                                |



## Product Specifications

## TPU-AGT G15

### BASE MATERIAL

TPU Argotec

### THICKNESS

7.5mil/190pm

### WATER CONTACT ANGLE

>150°,Hydrophobic

### GLUE

USA

### TENSILE RATE

260%

### ANTIAYELLOWING

$\Delta E < 2$

### SPECIFICATIONS

1.52x15m

### -UV BLOCK RATE

< 90%

### SELF HEALING

Instant self healing

### STAIN RESISTAYCE

PASS

### SURFACE GLOSS(60°)

98GU

### CHEMICAL RESISTANCE

Passed 72h acid & alkali immersion test

### HEAT RESISTANCE

PASS

### ANTI-STONE CHIP PERFORMANCE

PASS

### WARRANTY

10 Years

# Product Specifications

# TPU-LBR150

|                  |                             |                                         |
|------------------|-----------------------------|-----------------------------------------|
| BASE MATERIAL    | THICKNESS                   | WATER CONTACT ANGLE                     |
| TPU Argotec      | 7.5mil/190pm                | >150°,Hydrophobic                       |
| GLUE             | TENSILE RATE                | ANTIAYELLOWING                          |
| USA              | 250%                        | △E<2                                    |
| SPECIFICATIONS   | -UV BLOCK RATE              | SELF HEALING                            |
| 1.52x15m         | < 90%                       | Instant self healing                    |
| STAIN RESISTAYCE | SURFACE GLOSS(60° )         | CHEMICAL RESISTANCE                     |
| PASS             | 96GU                        | Passed 72h acid & alkali immersion test |
| HEAT RESISTANCE  | ANTI-STONE CHIP PERFORMANCE | WARRANTY                                |
| PASS             | PASS                        | 8 Years                                 |

# Gloss & Anti-Yellowing Lead

Argotec PCU

98% Score

Premium

80% Score

Standard TPU

60% Score

PVC / Hybrid Film

30% Score



Argotec PCU material outperforms conventional PPF formulations in retention of optical clarity, gloss index, and long-term resistance to tropical UV degradation

# Comprehensive Partner Support

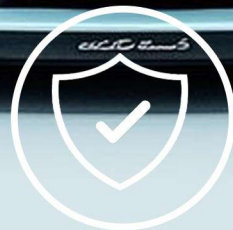
**Official Studio Certification:** Stand out in your city as an Authorized Argotec PCU Installation Center.

**Installer Masterclasses:** Hands-on training for your installation team to perfect wrapping techniques and minimize film wastage.

**Marketing & Lead Generation:** High-resolution digital assets, sample displays, demo kits, and targeted regional customer leads.

**15 -Year Backed Warranty:** Direct manufacturer-backed warranty program for total peace of mind and zero studio liabilities.





# **INCOGNITO**

## **PAINT PROTECTION FILM**

PREMIUM USA PPF

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