Multi-layer decorative film
Parapure FB series

KURARAY CO., LTD.
## Parapure FB Series development products

Multi-Layer Co-Extrusive film based on Kuraray’s original Acrylic Resins

<table>
<thead>
<tr>
<th>Grades</th>
<th>FB02</th>
<th>FB03</th>
<th>FB10</th>
<th>FB20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure</td>
<td>Transparent Acrylic</td>
<td>Black Acrylic</td>
<td>Transparent Acrylic</td>
<td>Lamination Layer</td>
</tr>
<tr>
<td></td>
<td>Black Acrylic</td>
<td>Black ABS</td>
<td>Black Acrylic</td>
<td>PP</td>
</tr>
<tr>
<td></td>
<td>2 Resins 2 Layers Co-Extrusion</td>
<td>2 Resins 2 Layers Co-Extrusion</td>
<td>3 Resins 3 Layers Co-Extrusion</td>
<td>2 Resins 2 Layers Co-Extrusion</td>
</tr>
<tr>
<td>Thickness</td>
<td>• 200μ</td>
<td>• 450μ</td>
<td>• 380μ</td>
<td>• 325μ</td>
</tr>
<tr>
<td>Workability</td>
<td></td>
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<tr>
<td>PPs</td>
<td>-</td>
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<td>O</td>
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<tr>
<td>ABSs</td>
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<td>-</td>
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<tr>
<td>Steel</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>O</td>
</tr>
</tbody>
</table>

※Adhesive Coating
Kuraray’s Original Jet Black Color

【Jet Black Color】
- Dye/Pigment compound with mass production track record
→ Authentic Jet Black

【Weatherability】
- Jet Black compound
- Protection by Ultraviolet absorber
- Less deterioration of Mechanical property, Optical property and Appearance thanks to Acrylic resins

→ Achieved color difference
\[ \Delta E < 3.0 \] after 20000h exposure
(More than 2 years at outdoor)
Characteristics of Parapure FB10

【Structure】

- Transparent Acrylic
- Black colored Acrylic
- PP Adhesive layer

Non Masking Two-tone color decoration

By using ‘TOM molding’*, Two-tone color decoration without masking tape processing can be achieved (ex. Resin/Film, Paint/Film)

Suitable for the use in lower body parts

Can be used for the stepping stone part because of adding pitching resistance by using elaborate Adhesive layer

Manufacturing Process

1. Set molded parts and film on vacuum pressure forming chamber
2. Vacuum pressure forming
3. Separate unnecessary part by laser cut
4. Done

Chipping Resistance (Gravel Test Result)

SAE J-400 (Test for Chip Resistance of Surface Coatings, Stone 2.5-5.0mm, 50 g, Angle: 90°, Temperature: -20°C, Pressure: 0.4 Mpa)

Exhibit

- TOM*1: Formulation with TSOP sheets by TOM
- Cut*2: Cut out from Mass production cars’ non stepping stone part (TSOP)
Good adhesion to PP, even after stretched in molding process

- Substrates: “Novatec MA3” (Japan Polypropylene Corp.)
Good Adhesion Durability to PP substrates

Evaluation Method:
Laminates film with substrates by TOM, check if there is any peeling after durability test.
- TOM lamination temperature: 130°C
- Substrates: “Novatec MA3” (Japan Polypropylene Corp.)

<table>
<thead>
<tr>
<th>Item</th>
<th>Condition</th>
<th>100%</th>
<th>200%</th>
<th>300%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat resistance</td>
<td>80°C × 1000hr</td>
<td>○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moist Heat resistance</td>
<td>50°C × 95%RH × 1000hr</td>
<td>○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heat cycle resistance</td>
<td>80°C → -30°C → 50°C × 95%RH → 80°C</td>
<td>○</td>
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</tbody>
</table>
Parapure FB10 Gravel Test Result (Chipping Resistance)

(SAE J-400 (Test for Chip Resistance of Surface Coatings,
Stone 2.5-5.0mm, 50 g, Angle: 90°, Temperature: -20°C, Pressure: 0.4 MPa))

Before Test

After Test

Laminated onto TSOP plate by TOM

Ref1. After Test Coated Plastic Bumper

Ref2. After Test General decorative film (*)

Cut out from Mass production cars (TSOP)

Laminated onto TSOP plate by TOM

(*) This decorative film is used in no stone-chipping part
ParapureFB20 Introduction

PP resins Backing film for FIM (Film Insert Molding)

- Can be laminated with General Metallic tone film and Printed decorative film
- Can be adhered with PPs resin by FIM
- By using PPs, compared with ABS resins, weight reduction and cost reduction could be realized