

High peel strength of SEPTON™ BIO-series to prism sheet

Elastomer R&D department
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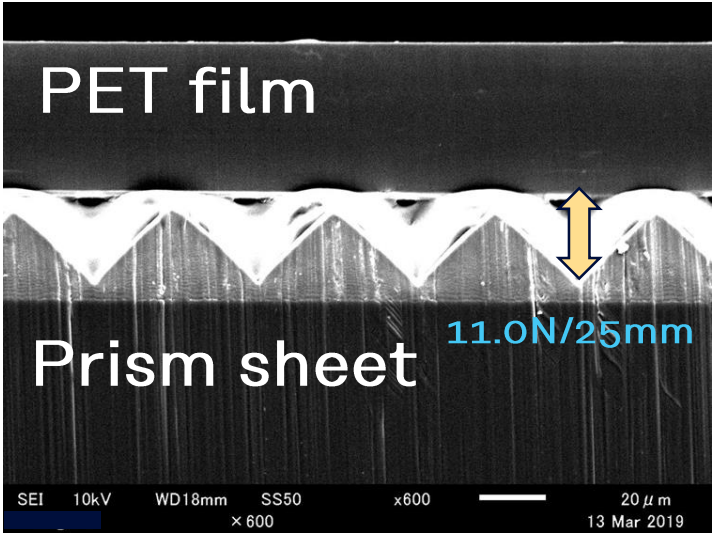
Peel strength to prism sheet

We recommend (1) Solvent coating film of SEPTON™ BIO-series SF902

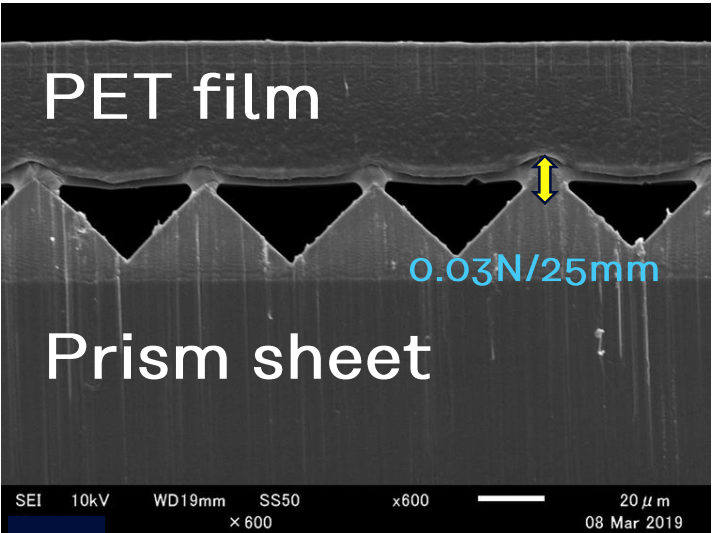
| | | Thickness (μm) | 180° Peel strength to prism sheet (N/25mm) |
|-------------------------|---|--------------------------------|---|
| Solvent coating film | (1) SEPTON™ BIO-series SF902 (TS=25wt%) | 30 | 11.0 |
| | (2) SEPTON™ BIO-series SF902 (TS=12.5wt%) | 20 | 1.1 |
| | (3) SEPTON™ BIO-series SF904 (TS=25wt%) | 30 | 0.02 |
| | (4) HSBC/Tackifier = 80/20 (TS=25wt%) | 30 | 0.02 |
| | (5) Commercial products | 10 | 0.03 |
| Co-extrusion film | (6) SEPTON™ BIO-series SF904 | 30 | 0 |
| | (7) HSBC/Tackifier = 80/20 | 30 | 0 |

SEM observation

Flexible SEPTON™ BIO-series SF902 is adhesive led to higher peel strength than commercial protective film. No adhesive residue after peeling of the adhesive of SEPTON™ BIO-series SF902.

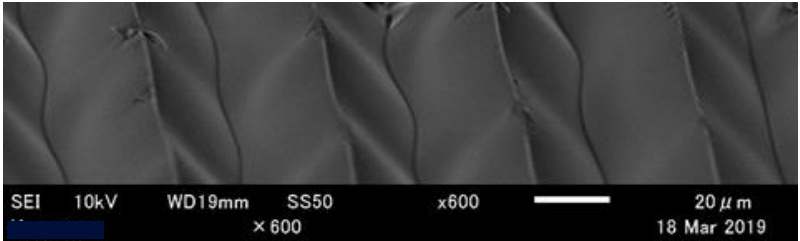


Adhesive layer



(1) SEPTON™ BIO-series SF902 (TS=25wt%)

(5) Commercial products



(1) SEPTON™ BIO-series SF902 (TS=25wt%) Prism sheet after peeling

Conditions

Solvent coating

Solvent : Cyclohexane

TS : 25wt%

Baker film applicator: 6mil

Coating speed : 50mm/sec

Drying condition: 60deg.C x 30 min → 23 deg.C x 22h

Thickness of the adhesive layer: 20 μm (after drying)

Measuring method

Lamination

Roller speed:10mm/sec

Load : 2kgf

Adherend : Prism sheet (Prism surface)

Measurement of peel strength

Cross head speed: 300 mm/min

Sample width : 25 mm

Co-extrusion film

| | Base material layer | Adhesive layer |
|----------------|---------------------------------------|---------------------------------------|
| Extruder | GM30-28 (GM engineering Co., Ltd.) | GM25-25 (GM engineering Co., Ltd.) |
| Screw | Single | Single |
| L/D | 28(φ30) | 25(φ25) |
| Feed block | Selector plug | |
| T-die | T300 (Coat hanger type) | |
| Temp. (deg.C) | 190 | 190 |
| Thickness (μm) | 32 | 8 |

Base material: Block-PP (MFR=7.5g/10min)

Recommended layer structure for protective film with high bio-based content

~Co-extrusion molding~

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Recommended layer structure Co-extrusion molding

| | | | |
|----------------------------|----------|--------|-----|
| Base material layer | Bio-HDPE | μm | 28 |
| Adhesive layer | HSFC | μm | 8 |
| Total bio-based cont. | | % | 85 |
| 180° Peel strength to PMMA | | N/25mm | 6.2 |

Materials

Bio-HDPE : SHE150 (Braskem S. A.)

Bio-based cont. 94%, MFR 1.0 g/10min. (190 deg. C, 2.16kg)

HSFC : SEPTON™ BIO-series SF904 (Kuraray Co., Ltd.)

Bio-based cont. 50%, MFR 15 g/10min. (190 deg. C, 2.16kg)

Molding conditions

| | Base material layer | Adhesive layer |
|------------|---------------------------------------|---------------------------------------|
| Extruder | GM30-28 (GM engineering Co., Ltd.) | GM25-25 (GM engineering Co., Ltd.) |
| Screw | Single | Single |
| L/D | 28 (ϕ 30) | 25 (ϕ 25) |
| Feed block | Selector plug | |
| T-die | T300 (Coat hanger type) | |
| Temp. | 190 deg. C | |

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