



BOPP Film Applications





Products End Uses

- **Printing Application**
- **Adhesive Tape Application**
- **Garment Bags and Bagging Application**
- **Board Lamination Application**
- **Flower Wrap Application**
- **Others & Specialty Application**



BOPP FILM

CODE	DESCRIPTION	APPLICATION	MICRON	H/S
B-01	PLAIN FILM, ONE SIDE CORONA TREATED	PRINTING & LAMINATION	18-60	NON
B-02	PLAIN FILM, ONE SIDE CORONA TREATED	ADHESIVE TAPE	18-60	NON
B-02A	PLAIN FILM, ONE OR BOTH SIDE CORONA TREATED	ADHESIVE TAPE	25-50	NON
B-03	PLAIN FILM, ONE OR BOTH SIDE CORONA TREATED	BOARD LAMINATION	12-20	NON
B-05	PLAIN FILM, ONE SIDE CORONA TREATED	METALLIZING PURPOSE	18-50	NON
B-06	PLAIN FILM, ONE SIDE OR NON CORONA TREATED	PHOTO ALBUM	40-60	NON
B-08	PLAIN FILM SUPER CLEAR, ONE SIDE CORONA TREATED	ADHESIVE TAPE	20-25	NON



CODE	DESCRIPTION	APPLICATION	MICRON	H/S
B-14	PLAIN FILM, ONE OR BOTH SIDE OR NON CORONA TREATED	GARMENT BAG	25-60	NON
B-15	PLAIN FILM, ONE OR BOTH SIDE OR NON CORONA TREATED	FLOWER WRAP	25-60	NON
B-16	HI HAZE MATT, ONE OR BOTH SIDE CORONA TREATED	BOARD LAMINATION	15,18,20	NON
B-17	MATT BOTH SIDE FILM, ONE OR BOTH SIDE CORONA TREATED	FLOWER WRAP & DECORATION	35	NON
B-21	CO-EX FILM, ONE SIDE CORONA TREATED	PRINTING & LAMINATION	15-50	BOTH SIDE
B-22	CO-EX FILM, NO CORONA	CIGARETTE WRAP	21	LOW H/S
B-23	CO-EX FILM, ONE SIDE CORONA TREATED	METALLIZING PURPOSE	20,25	BOTH SIDE
B-28	CO-EX ANTIFOG FILM, ONE OR BOTH SIDE CORONA TREATED	PACKING VEGETABLE & FRUITS	25	BOTH SIDE



CODE	DESCRIPTION	APPLICATION	MICRON	H/S
B-32	CO-EX PEARLIZED OPAQUE, ONE SIDE CORONA TREATED, LOW H/S	PRINTING & LAMINATION	25,30,35,40	BOTH SIDE
B-34	CO-EX PEARLIZED OPAQUE FILM, HIGH SLIP	PRINTING & LAMINATION	25-40	BOTH SIDE
B-41	METALLIZED BOPP CO-EX FILM, ONE SIDE CORONA TREATED	DRY LAMINATION	18,20,25,35,40	ONE SIDE
B-42	METALLIZED BOPP FILM, ONE SIDE CORONA TREATED	DECORATION	20-50	NON
B-51	CO-EX WHITE FILM, ONE SIDE CORONA TREATED	PRINTING & LAMINATION	28,35	BOTH SIDE
B-52	WHITE FILM, ONE SIDE CORONA TREATED	ADHESIVE TAPE	28	NON
B-53	CO-EX WHITE OPAQUE FILM, ONE SIDE CORONA TREATED	PRINTING & LAMINATION	25,35	BOTH SIDE
B-62B	SYNTHETIC PAPER, ONE SIDE MATT	PRINTING & LAMINATION LABELLING	25,30,40,50	NON



BOPP Film Specialty Film Selections

B-28 BOPP COEX ANTIFOG

BOPP COEX (Anti-fog)

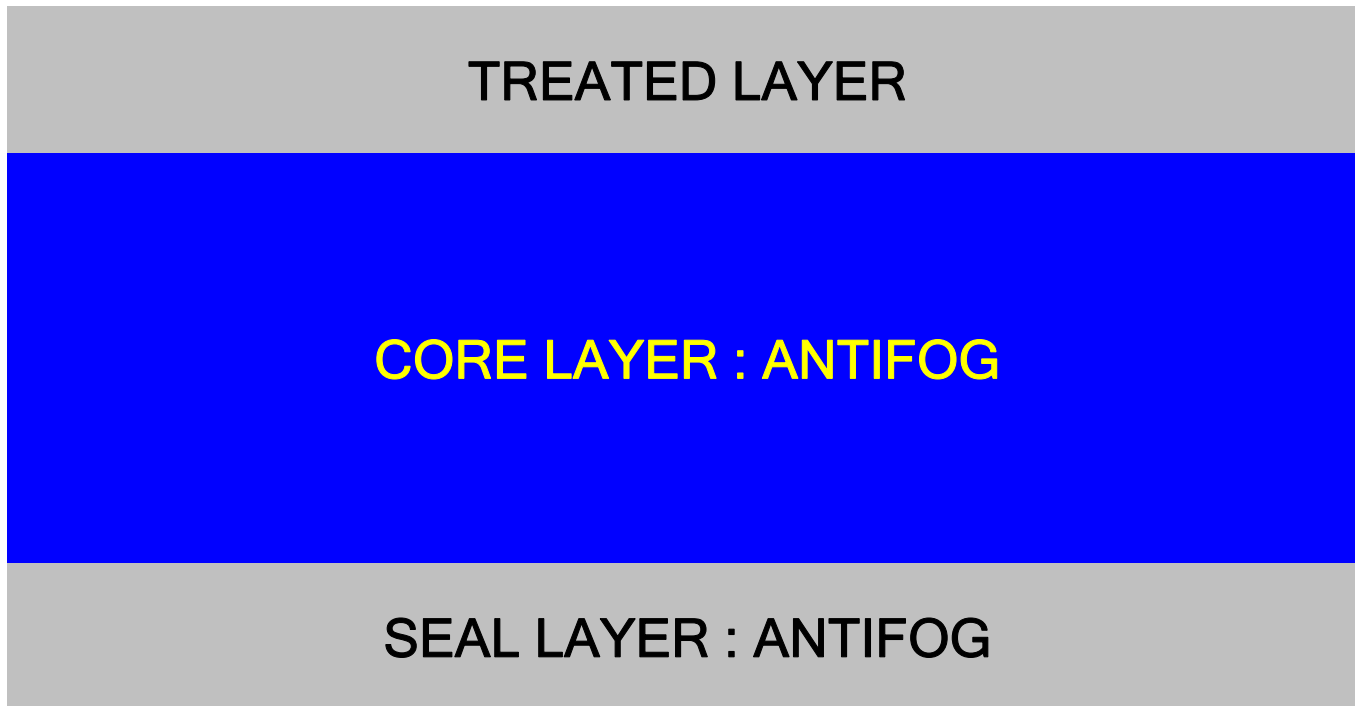
Application & Strength

- ❖ Transparent BOPP film, both sides sealable with Antifog effect; cold fog type, specially designed for fresh vegetable packaging.
- ❖ Cold fog effect by migrating additive not coat
- ❖ Able to treat on other side (not anti-fog) for printing



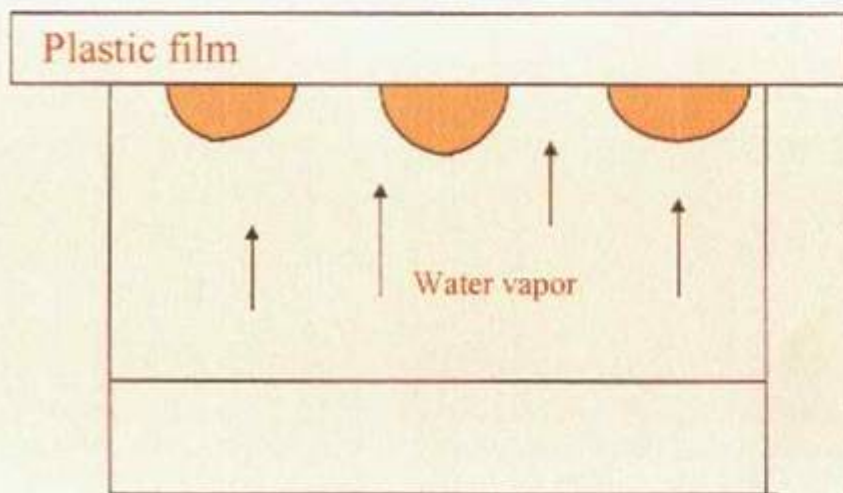


B-28 BOPP COEX ANTIFOG





Fog formation



- Enclosed air is cooled
- Capacity of water vapor is reduced
- Surface tension between plastic film and water is different
- Excess water vapor is condensed in the form of water droplets

Environmental temperature



Key antifog film requirements

- Gas permeable (vegetable can intake O_2 and give off CO_2 during breathing)
- Good water permeable (to minimize excess water vapor)
- Long shelf life of the film
- Inventory management
- Storage conditions- additives are sensitive to heat. Keep the film in cool & dry place is to maximize film shelf life



ANTIFOG ADDITIVE CHARACTERISTICS

- Is added to the film to reduce water droplet formation by decreasing the contact angle between droplet & the film surface
- FDA antifog agents
- The best antifog performance at 4-10 deg C
- Minimal impact on film optical properties
- Maintain good surface retention



ANTIFOG ADDITIVE

Mechanism

- ◆ Mixed in bulk polymer matrix
- ◆ Migrate to surface
- ◆ Attract atmospheric moisture
- ◆ Water forms a continuous layer
- ◆ Antifogs reduce the surface tension of water
- ◆ Lower the contact angle of water with film surface; flatter droplets → clearer film

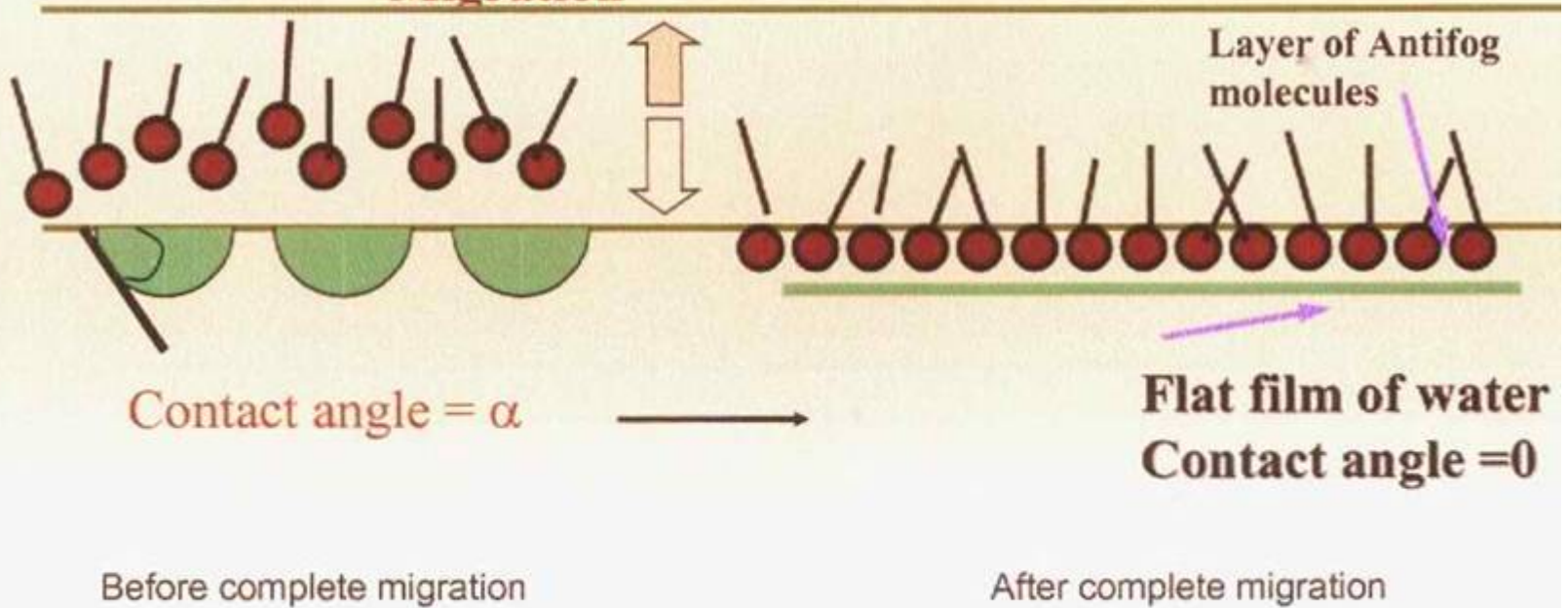



Mechanism

ANTIFOG

Migration

Plastic Film





Example of test method

- ◆ **Cold Fog method:**

- ◆ **Film is secured over a container of water and placed in refrigerator at 4°C**

- ◆ **Formation of droplets observed**

- ◆ **Scalar rating criteria applied:**

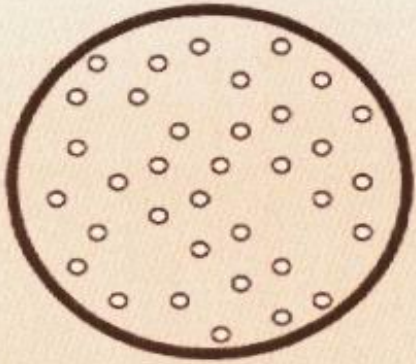
1 = opaque film with small discrete droplets (A)

10 = complete clarity; thin transparent layer (E)

5 = 50% clarity; large discrete droplets

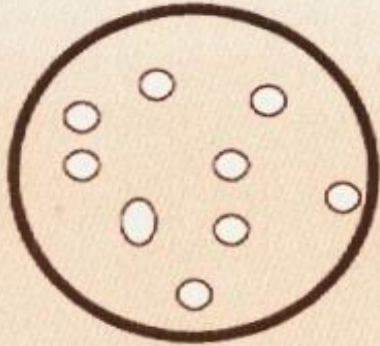


A/F performance rating



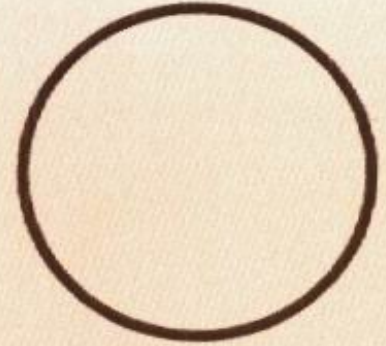
Rating: 1

A



Rating: 5

C



Rating: 10

E



Example of test method

- Rapid Beaker test:
 - Fill container ($\phi = 7.5 - 10$ cm) with water 90°C
 - Allow to cool to 85°C before starting test
 - Place film on container
 - Leave for 3 second and monitor fog formation
 - Result: Accept if any film found to be fog free after 3 second



SUMMARY ANTIFOG

- Identify food application, shelf-life, and desire A/F duration, and test method
- Select suitable antifog additives for particular converter process, film structure and selected resin
- Convert the plastic materials into the form that meet packaging line requirements
- Do not alter source of supply of all ingredients once attaining desire antifog properties



B-21 BOPP COEX

❖ BOPP CO-EX printing & lamination

Application & Strength

- Low heat seal temperature
- Good heat seal strength
- Clarity
- Low COF
- Good anti-static for printing process
- Down gauge to 15 microns



B-21 BOPP COEX

TREATED LAYER : FOR PRINTING & LAMINATION

CORE LAYER : MIGRATED ANTISTATIC

SEAL LAYER : LOW COF



B-22 BOPP COEX CIGARETTE WRAP

❖ High quality BOPP CO-EX cigarette overwrap

Application & Strength

- Good heat seal strength
- Good hot slip
- Low COF for High speed packing machine 400-600 ppm
- e.g. cigarette wrapping Industries, DVD over wrapping.





B-22 BOPP COEX CIGARETTE WRAP

SEAL LAYER : GOOD HOT SLIP & LOW COF

CORE LAYER

SEAL LAYER : GOOD HOT SLIP & LOW COF



B-03 BOPP PLAIN BOARD LAMINATION

❖ **BOPP Plain Board Lamination**

Application & Strength

- High gloss
- Low COF
- Down gauge to 12 microns
- Design specially for automatic laminating machine
- Preventing surface from scratching





B-03 BOPP PLAIN BOARD LAMINATION

TREATED LAYER : FOR LAMINATION

CORE LAYER : MIGRATED ANTISTATIC

TREATED LAYER : for GOLD or SILVER PRESS



B-16 BOPP MATT

❖ BOPP Matt Film

For Board Lamination, Labeling, Adhesive Tape

Application & Strengths

- Its matted side can eliminate light reflection for soft, classic-look also can be written on
- High haze matt (80%)
- High yield, especially 15 microns 83 sq.m/kg
- Low COF for automatic laminating machine
- Spot UV





B-16 BOPP MATT

TREATED LAYER : MATT, HIGH HAZE

CORE LAYER : MIGRATED ANTISTATIC

TREATED LAYER : FOR LAMINATION



B-17 BOPP MATT BOTH SIDES

- ❖ **BOPP Matt Film both sides**
For flower wrap & decoration

Application & Strengths

- **Unique outlook & both matt sides can eliminate light reflection for soft**
- **High haze matt (85%)**
- **High yield**
- **Able to print on one or both sides**





B-17 BOPP MATT BOTH SIDES

TREATED LAYER : MATT, HIGH HAZE

CORE LAYER

TREATED LAYER : MATT, HIGH HAZE



B-41 METALLIZED BOPP COEX

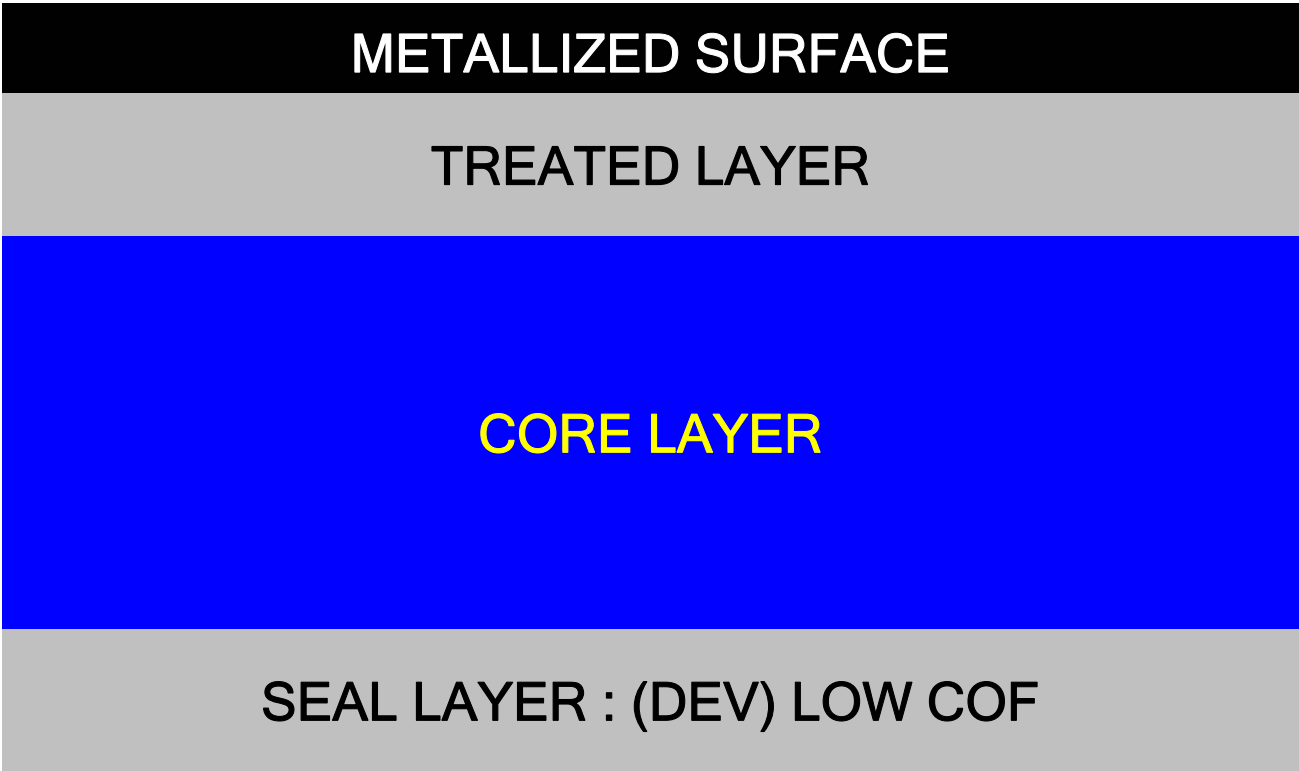
❖ **METALLIZED BOPP CO-EX for dry lamination**

Application & Strength

- Shiny metallized surface
- Good barrier ; WVTR & O₂TR
- Even optical density
- Develop low COF < 0.4 for high speed wrapping machine



B-41 METALLIZED BOPP COEX





B-32 BOPP COEX PEARLIZED OPAQUE

BOPP Pearlized Opaque

Application & Strength

- ❖ For Packaging, Wrapping of short shelf life such as ice cream, chocolate bar, candies, cookies, and biscuit.
- ❖ High yield
- ❖ Low heat seal temperature





B-32 BOPP COEX PEARLIZED OPAQUE

TREATED LAYER : FOR PRINTING

CORE LAYER : CAVITATED PEARLIZED OPAQUE

SEAL LAYER



B52 BOPP WHITE

BOPP white plain film

Designed for decorative and industrial applications.

Application & Strength

- **Excellent white pigment distribution, solid white & flatness.**
- **High Density**
- **The application can also be for Adhesive Tape, Gift Wrap, Flower Sleeves**





B52 BOPP WHITE PLAIN

TREATED LAYER : FOR PRINTING

CORE LAYER : SOLID WHITE

SKIN LAYER



B-51 BOPP WHITE COEX

BOPP white coex film

Designed for printing & lamination applications.

Application & Strength

- Excellent white pigment distribution, solid white & flatness.
- High Density
- Low heat seal temperature



B-51 BOPP WHITE COEX

TREATED LAYER : FOR PRINTING

CORE LAYER : SOLID WHITE

SEAL LAYER



B-62b BOPP SYNTHETIC PAPER

❖ BOPP Synthetic Paper

Paper looks for Bagging, Labeling, Over wrapping, Medical packaging replace Bleach Kraft paper



Application & Strength

- Strength of materials and water resistance can be substituted for Bagging, also to paper
- High yield (**density = 0.8**)
- Consistency on paper-like & white pigment
- Able to write on paper-like side





B-62b BOPP SYNTHETIC PAPER

TREATED LAYER : PAPER-LIKE

CORE LAYER : CAVITATED PEARLIZED OPAQUE

SKIN LAYER



Thank you for your attention