

TNF

SPECIAL FILM CATALOGUE

Breathe & Fresh Film

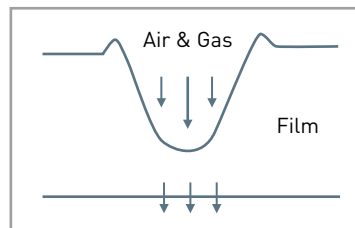
Definition and Principal

Breathable freshness packaging film (Modified Atmosphere Packaging : MAP film)

A kind of air breathable packaging materials, artificially controls air penetration by micro holes on one or both side of plastic film, to keep moisture but oxygen and gas can be artificially penetrated.

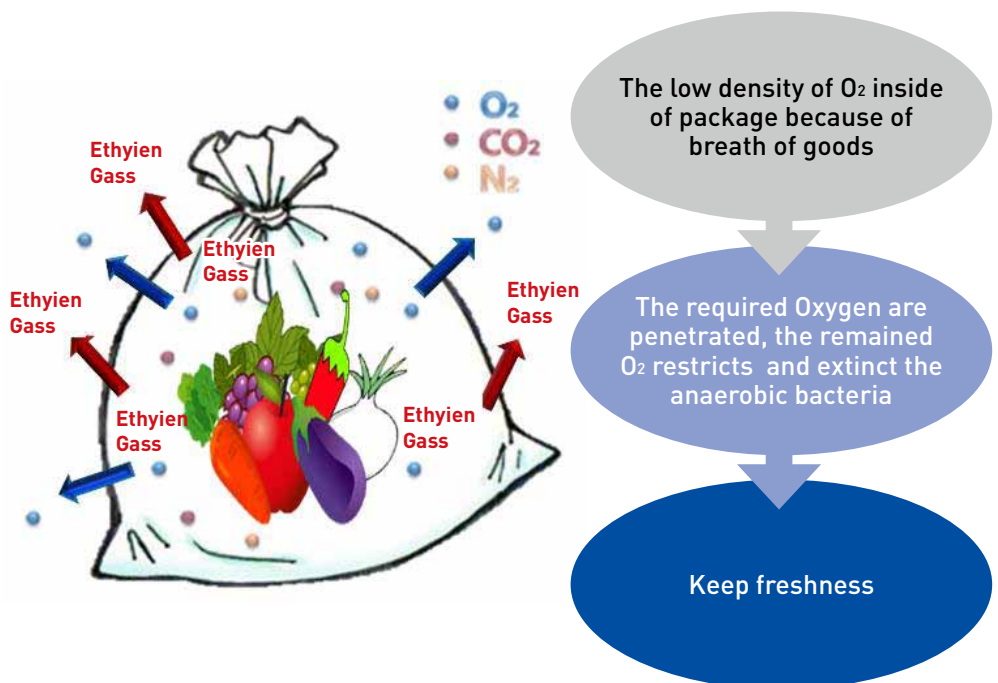
The Breathe & Fresh film provides the packed fresh goods longer storage life with keeping its own feature.

Usage : Foods, Vegetables, Fruits, and any other required permeability



Keep freshness with each ones required breathability by artificial air penetration

Effects



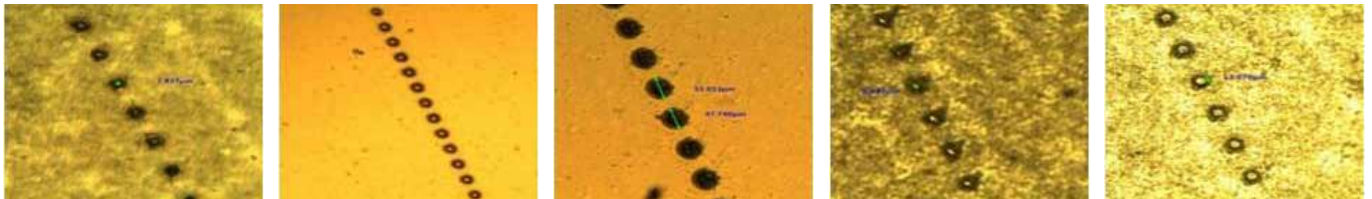
What is anaerobic breath?

The breathe with no Oxygen states, generates Acetaldehyde acetate, ethanol from decomposition of organics by microbes.

TNF Laser perforation

Non-perforation	Micro holes	Reliability of micro hole	Economic benefits
Able to control depth of hole, possible to produce non-perforation(hole) (Advantages of laser perforation)	Artificially generate the micro holes under $10\mu m$ by adjusting laser output	No micro hole change by heat and uniform size and shape	Lower facility expense by single laser with multiple spectrum laser filter for wide areas of film

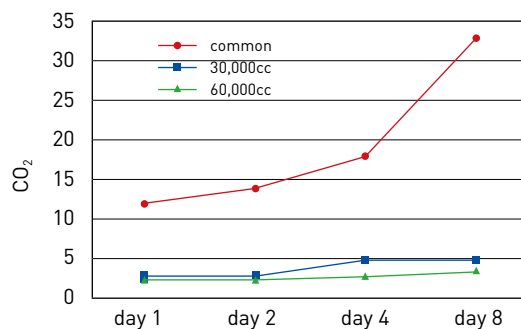
controls Permeability : the air penetration rate are freely controlled rely on packed goods, increasing freshness



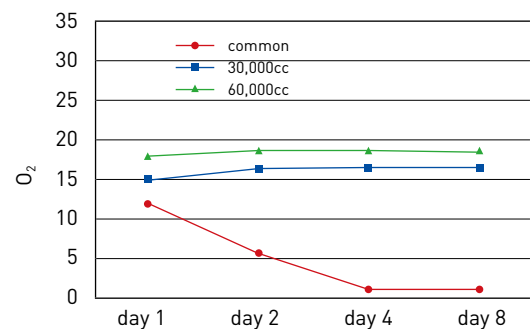
Control the hole size, distance, quantities and shapes(regular and irregular)

Storage TEST

Storage condition : 8~9°C refrigeration



Storage terms



Existing film

- CO₂ increase and ethylene gas accumulate
- Low oxygen cause nasty smell
- Corruption by microbes activating
- Lower market ability from perishable goods

TNF film

- O₂ penetration of each one's breathe capacity
- Optimize composition of CO₂ and O₂
- Minimize the bio activation
- Restriction of microbes breeding

Applications

Flowers	Foods fresh storage	Tropical fruits	Higher sugar content

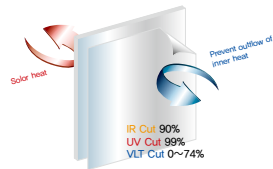
Heat Cut Film

The Functions of heat cut film



Block UV rays 99.9%

- This guy drives truck for 25 years. His left face are much heavier wrinkled. The sun destroys collagen proteins which maintain elasticity.
- TNF heat cut film Protect ageing from strong solar heat in all four season



Decrease solar Heat up to 40%

- The solar heat cause diffused reflection which main causes of amblyopia, especially over solar heat cause stress on optic nerves as well as fatigues in eyes. And the developed countries are warning the over solar heat as invisible virus.
- TNF heat cut film can control and reduce harmful layers and heats up to 40%



Save Energy : Save Cooling and Heating cost up to 30%

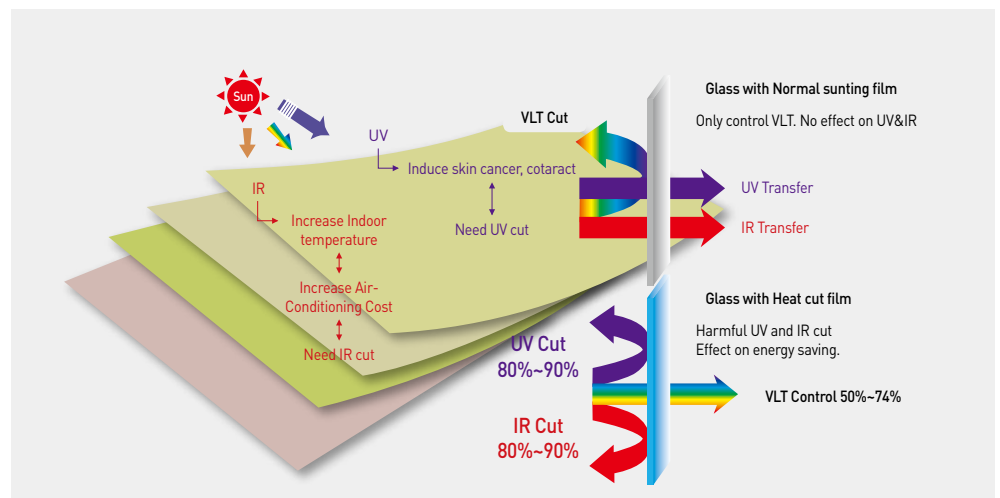
- TNF heat cut film reflects and blocks heat transfer to outside in winter to keep warm inside
- TNF heat cut reflects and absorb Solar heat from out side in summer to lower solar heats more than 70-90% which save energy and cost of cooling and heating



Prevention of 2nd dangers and crimes

- From accident and disaster, TNF film protects from 2nd dangers by broken glass pieces

IR film saving effects

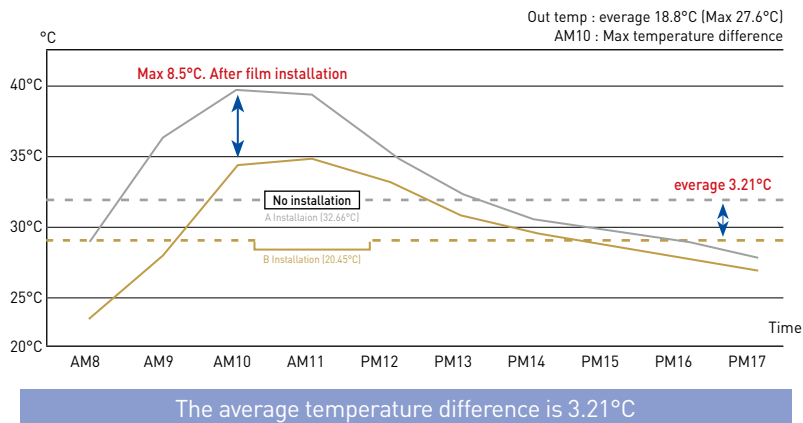


Energy
Saving
Factor

$$= \frac{\text{Sum of incoming energy of 3mm glass} - \text{Sum of incoming energy after heat cut coating}}{\text{Sum of incoming energy of 3mm glass}}$$

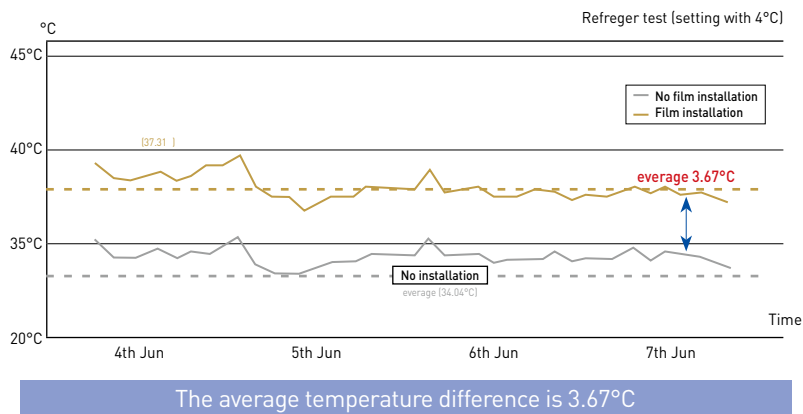
$$= \frac{88-56}{88} \times 100 = 36.4\%$$

Simulation data



Temperature differential Up to 8.5°C by Heat Cut film

Summer season experiments :
Compare with no-film glass and film applied glass



Heat Cut film reduce Heat transmission coefficient

Winter season heat shielding film experiments :
Compare with no-film glass and film applied glass

Architectural : Zephyrus



- UV Block(99%), IR block (60%~99%)
- Energy saving effects by heat cut
- High function films with privacy protection.

Automobile : Zephyrus / winmil



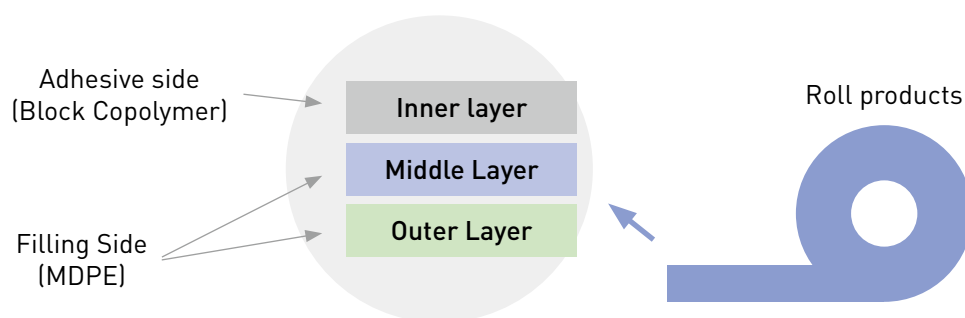
- UV block(99%), IR block (60%~99%)
- TNF own technology would make comfortable view with high functional heat cut

Self Adhesive Protect Film

Product Description

- Designed for protector film of plastic injection molding by PMT, PC
- Production environment : clean room, Inspection report is available
- No migration on adhesion to the applied plastic comparing with Coating type
- Little change material character, minimize production GEL occurrence
- Heat-resistant type, keep the initial adhesion in low and high temperatures (-20degree to 80degree)

Product Construction



Features

- Excellent Durability (No Migration), No particle
- Manufactured in 10,000 Class Clean Room
- Humidity-resistant adhesive
- Middle adhesion build up
- No Migration

Applications

- Use surface protection injection molded plastic :
From low to high adhesion required material (Car head light module, rear lamp)

Properties

Thickness (μm)	Stregth (gf/25mm)	Width (MM)	Roll(M)	Color
20~120	2~800	MAX 2,800MM	200~3,000	Clear

Self Adhesive Protect film

Hyundai Mobis Protect film Layer

Multi Ollehpin PE Layer

Multi Ollehpin PE Layer

Self-adhesive layer(head-light)

<TNF Self Adhesive Protect film>



- Solve problems of migration of existing adhesive coating
- Solve Migration on head light glass lens
- Supplies Reference of famous and leading companies such as Hyundai Mobis
- Quality control





TNF CORPORATION

322 Opoan-ro, Opo-eup, Gwangju-si, Gyeonggi-do, South Korea

Tel. +82-31-794-7661 **Fax.** +82-31-794-7662

E-mail. tnf@tnfcorp.co.kr www.tnfcorp.co.kr

