RAPAMIR

RAPAMIR film

Non Toxic Polyvinyl Chloride

The environment is our primary concern at PAMIR.
Rapamir's non-toxic PVC is manufactured without the use of phthalate-based plasticizers using an eco-friendly antibacterial plasticizer developed by our company. It is used in pharmaceutical packaging, molding, high-transparency films, and decorative sheets.

FEATURES

Excellent antibacterial, antiviral, and antifungal effects of 99.9%	Toxicologically harmless (Japan JHPA, PL standard, Germany BGA)	Superior gloss and transparency
High impact resistance	Resistance to high temperatures and flame retardancy	Excellent processing and molding properties

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PAMIR

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RAPAMIR
Eco-friendly blister film

99.9% antibacterial, antiviral, antifungal

Global leading Eco-friendly material company

GREETING

'Pamir' is a market leader in the eco-friendly materials industry, owing to its corporate philosophy of respect for life and naturalism.

We developed Korea's first eco-friendly plasticizer, with ZERO environmental hormones. Our products have made a significant contribution to the global market for eco-friendly materials. Pamir was founded in 2015, that specializes in the development of new cutting-edge materials and environmentally friendly medical devices. Since our inception, we have focused on developing eco-friendly products for infants and toddlers, as well as products that benefit patient health. In 2017, Pamir collaborated with Sungkyunkwan University, to develop an eco-friendly plasticizer with ZERO environmental hormones for the first time in Korea. We distribute eco-friendly plasticizers to both domestic and international customers. Additionally, we manufacture eco-friendly blister films (for pharmaceutical and food use) based on eco-friendly plasticizers and supply them to both pharmaceutical and food companies. We also develop and supply hospitals with disposable medical supplies. Pamir's ultimate goal is to be a global leader for environmentally friendly disposable medical supplies. Eco-friendly medical devices that do not emit environmental hormones, are now the trend in the medical device market. This market has grown rapidly to a size of 500 trillion won (418.4 Billion USD). Medical devices that are directly linked to human life, only eco-friendly ones will survive. Pamir is expanding its business to include not only eco-friendly medical devices, but also baby products, general household goods, and industrial goods. Through continuous R&D, investment, cutting-edge manufacturing facilities, and overseas subsidiaries, we are becoming the world leader in providing eco-friendly plasticizer. We request your undivided attention and heartfelt encouragement for Pamir, which aspires to take a second leap forward.

CEO **Yoon Ju-il**

VISION

R&D	Customer	Produce	Ownership
Research and development of eco-friendly high-tech materials on a continuous basis	Suggestion of user-friendly purchasing conditions	Establishment of a manufacturing environment conducive to the production of superior products	Thorough quality control combined with a sense of product ownership

TYPE OF PACKAGING

Thermoforming

• PVC

Alu
Tablet
PVC

- The most commonly used method in pharmaceutical blister packaging
- Generally, 250-400㎛ thick PVC film is used
- Mainly PVC is used, but PP (Propylene) material is also used to increase the moisture-proof effect

• PVDC

Alu
Tablet
PVDC

- Suitable for drug packaging that requires hygroscopicity and gas blocking of oxygen and water vapor
- Various colors available, such as transparent, opaque, white, etc
- In overseas countries, PVC and PVDC are laminated to strengthen the physical properties of 2-Layer (PVDC/PR/PVC) PTP packaging products

Coldforming

• Alu-Alu

Alu
Tablet
Nv
PVDC

- Perfectly blocks external substances such as water vapor, light, gas, and aroma
- Excellent formability, thermal stability and ductility
- Cold Forming Foil
- Cold forming provides a much larger area for drug packaging than thermoforming
- High demand in Southwest Asia due to humidity/temperature

• No odor	Odorless
• Non-toxic	Pass toxicology test
• Non-benzene	Environmental-friendly plasticizer
• Low VOCs	Reduce the amount of viscosity reducer Reduce VOCs emissions

RAPAMIR

HB-02(Eco-friendly antibacterial plasticizer)

molecular formula / material name	C26H48O4 (1,2-cyclohexane dicarboxylic acid diisononyl ester)
molecular weight	424.7 g/mol
CAS No.	166412-78-8

- HB-02 is a non-phthalate premium eco-friendly antibacterial plasticizer equipped with an antibacterial function (AFCP (Anti Bacterial/Fungal Coating Polymer)) that uses physical surface tension rather than chemical substances (zinc, copper, silver nano, etc.) so that it is harmless to the human body.
- As a non-phthalate-based eco-friendly antibacterial plasticizer, it can be used in various products that come into contact with people.
- As a colorless, odorless and transparent antibacterial plasticizer, it can be applied to soft products such as those for medical use, wallpaper, flooring, toys, food wrap, and sheets.
- It has excellent compatibility with other general plasticizers and additives used in PVC.
- In particular, 99.99% of antibacterial, anti-fungal, and antiviral functions are excellent when producing finished products.

	HB-02	DINCH	DOP	DOTP	Method
Hardness Shore A(10 sec)	83.0	82.0	78.5	82.1	ASTM D 2240
Plasticization efficiency	1.01	1.04	1.00	1.05	ASTM D 2240
Initial coloration	8.8	8.8	8.8	10.1	ASTM E 313
Permeability/Haze(%/%)	90.1/11.3	89.5/11.3	89.6/3.0	88.3/4.7	ASTM D 1003
Tensile strength(KG/CM)	182	180	181	193	ASTM D 638
Migration(wt%)	0.07	0.20	0.04	0.71	ISO 177
Low brittle transition temperature(℃)	-33.4	-33.4	-31.4	-32.2	ASTM D-746
UV weather resistance	Excellent	Excellent	Good	Poor	ASTM G-154
Antibacterial and antifungal	99.99%	0%	0%	0%	Standard Test Research Institute

Do you know about existing antibacterial technology products?

• Antibacterial products made with oxidizing heavy metals

Copper | Silver Nano | Aluminum | Nickel | Chrome | Particles

Comparable antibacterial products use oxidizing heavy metals such as copper, silver nanoparticles, aluminum, chromium, nickel, and titanium. All of these substances are harmful to the human body, and the electrons emitted during the oxidation reaction attack adjacent cells randomly, disrupting their metabolism. Such substances are regulated by the Ministry of Food and Drug Safety in particular because they disrupt DNA, emphasizing their carcinogenicity and toxicity to the human body.

RAPAMIR is a ground-breaking product for application to pharmaceutical packaging that does not use eco-friendly plasticizers or chemical substances which have the advantage of being migration resistant (non-elutable), but uses AFCP (Antibacterial/Fungal Coating Polymer) antibacterial technology which utilizes physical surface tension and is non-harmful to humans. The optimal packaging material for a drug is selected based on its physical and chemical characteristics before its expiration date. RAPAMIR is a PVC film certified by the Korea Construction Life Testing Laboratory (KCL), a Korean accredited certification. It is suitable for overseas export packaging because it ensures the stability of pharmaceutical packaging and is compatible with high-speed blister machines due to its quality consistency.

Anti-bacterial result against coliform bacillus (E-coli) and Staphylococcus aureus: **99.9%**

General surface

Antibacterial and antifungal coating surface

Anti-fungal result against aero-tropic white fungus: **99.9%**

General surface

Antibacterial and antifungal coating surface

CERTIFICATION STATUS

Patent

Eco-friendly plasticizer

Ether diol manufacturing

Medical needle case

Medical product design

Certification

GMP

ISO 13485

CE certificate

Biological stability test

4 major heavy metals, 6 types of phthalate test

cytotoxicity test

acute systemic toxicity test

hemolytic test

pyrogenicity test

skin sensitization test

intradermal reaction test

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