

Adding value to your products - worldwide



SEPTON™, HYBRAR™ and KURARITY™ are Kuraray's trademarks for thermoplastic elastomers (TPEs). They are a special type of synthetic rubber that combine the elastic properties of rubber with the benefits of thermoplastics. They can be processed into almost any shape. TPEs have a pleasantly soft touch and good wear comfort. They also increase shock absorption. What's more, they are recyclable. Kuraray's TPEs are environmentally sound, free of PVC and do not need additional plasticizers. They are used for an extremely wide range of applications including many plastic compounds for every-

day products. Examples include toys, toothbrushes, medical tubes, sports equipment, sealants and car tires. The flexible types are used as lubricant additives and base components in adhesives. Kuraray is a leading supplier of TPEs and offers customers more than 30 different grades with individual properties.

For further information, please contact your local Kuraray office or visit our website.

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Disclaimer: Precautions should be taken in handling and storage. Please refer to the appropriate Safety Data Sheet for further safety information. In using SEPTON™ and HYBRAR™, please confirm related laws and regulations, and examine its safety and suitability for the application. For medical, health care and food contact applications, please contact your Kuraray representative for specific recommendations. SEPTON™ and HYBRAR™ should not be used in any devices or materials intended for implantation in the human body. Nothing contained herein constitutes a license to practice under any patent and it should not be construed as an inducement to infringe any patent and the user is advised to take appropriate steps to be sure that any proposed use of the product will not result in patent infringement.

Doing more with less

Adding Value to Polyolefin Films with SEPTON™ & HYBRAR™



Softening and Elastic Modification



Kuraray has developed a range of materials that are suitable for dry blending in film extrusion processes. These styrenic block copolymers display maximum softness and elasticity and have excellent compatibility with polyolefins. The main advantage is to design film properties that normally cannot be achieved with commodity polyolefin, polyolefin elastomer, or plastomer resins.

Key Advantages

- High softness and elasticity with lowest material concentration
- Downgauging due to improved impact resistance
- Reduced Heat Seal Initial Temperature of Polypropylene (SIT)
- Maximum drop impact and softness improvement



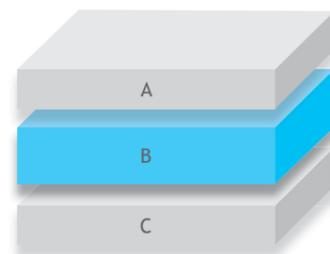
Flexible Packaging & Medical Films

In the field of flexible packaging films of polyethylene and polypropylene, SEPTON™ and HYBRAR™ can be used for specific customization. Compared to plastomers or polyolefin elastomers, these materials perform in the lowest necessary concentrations to maintain maximum value.

One primary advantage is the significant improvement in impact resistance which allows the potential to downgauge and reduce cost. For specific use with polypropylene, SEPTON™ & HYBRAR™ can potentially reduce the Sealing Initial Temperature (SIT) up to 10 degrees.

For food packaging and medical applications, Kuraray offers selected grades with food contact and/or medical compliance conforming to FDA, USP & EU standards.

Example: 3-Layer Film for Consumer or Industrial Packaging



- A: Seal or outer layer
- B: Core layer
- C: Inner layer



Industrial Packaging & Stationary Film

SEPTON™ and HYBRAR™ can also be used as modifiers for industrial packaging applications. Even at low concentration levels, increased impact strength, drop resistance, and overall improved functionality can be achieved with reduced total material consumption.

With their high filler loading capability, SEPTON™ and HYBRAR™ based compounds exhibit high performance and can replace expensive advanced polyolefins. In PVC replacement, PP/HYBRAR™ formulations offer a more environmentally friendly alternative with similar performance to soft PVC films.

3-Layer PP Cast Film

Layer	RPP	HYBRAR™/RPP
A Seal or outer Layer	100% RPP 10 µm	80% RPP 20% HYBRAR™ 7311F 10 µm
B Core Layer	100% RPP 40 µm	80% RPP 20% HYBRAR™ 7311F 40 µm
C Inner Layer	100% RPP 10 µm	100% RPP 10 µm
Modulus (MPa)	490	140 (-70%)
Impact Strength	30 J/m at -20°C	320 J/m (+960%) at -20°C
Heat-Seal Strength (N/25mm)	149 (120°C)	665 (+350%) (120°C)
	211 (125°C)	1644 (+680%) (125°C)
	770 (130°C)	1704 (+120%) (130°C)

3-Layer Blown Film

POE/LLDPE	SEPTON™/LLDPE
100% LLDPE 10 µm	100% LLDPE 10 µm
90% LLDPE 20% POE 40 µm	90% LLDPE 10% SEPTON™ 2004F 40 µm
100% LLDPE 10 µm	100% LLDPE 10 µm
N.D.	N.D.
507 g (Dart, RT)	780 g (+50%) (Dart, RT)
N.D.	N.D.

Measured by: Kuraray Research Technical Center Laboratory
Impact Strength: RPP and HYBRAR™/RPP by Izod Notched Impact, POE/LLDPE and HYBRAR™/LLDPE Dart Drop at 21°C.