

RECYCLING TODAY, SUSTAINING TOMORROW

GIVING RECYCLED RESINS A NEW LIFE, AND OPTIMIZED THEIR VALUE



PCR



TAIPOL | VECTOR



SUSTAINABLE SBC ELASTOMER SOLUTIONS

TSRC's sustainable elastomer products offer comprehensive solutions for the full lifecycle management of plastics and support the circular economy. Our products provide excellent compatibility and performance enhancement with various resins across multiple applications, particularly in post-consumer resin (PCR). The solutions include rTPE, pure SEBS elastomers, and ISCC Plus certified bio-based SBCs. We are committed to increasing the use of recycled materials, reducing carbon emissions and enhancing the performance of recycled materials simultaneously.

Key Features



rTPE INCREASING RECYCLED MATERIALS CONTENT

rTPE embodies TSRC's strong commitment to sustainability and is certified under the Global Recycled Standard (GRS), covering the entire process from recycled sourcing to TSRC's production. This innovative product series significantly enhances the value of PCR, serving as an impact modifier while reducing the hardness of PCR to as low as ≤ 80 Shore A. Additionally, rTPE is compatible with rPP, boosting low-temperature impact strength while maintaining excellent stiffness. It ensures product performance while supporting increased use of recycled materials to help meet carbon footprint reduction goals. Moreover, rTPE complies with both REACH and RoHS standards, ensuring safety and environmental compliance.



	TAIPOL 7001	TAIPOL 7004	TAIPOL 7006	TAIPOL 7007
PCR Content%	70	30	30	70
Color	Green	Green	Green	Semi-Transparent
Hardness (Shore A)	91	69	78	-
Hardness (Shore D)	44	19	27	51
MFI (230°C*2.16kg)(g/10min)	5.6	4.6	6.3	9.5
Density	0.89	0.89	0.88	0.89



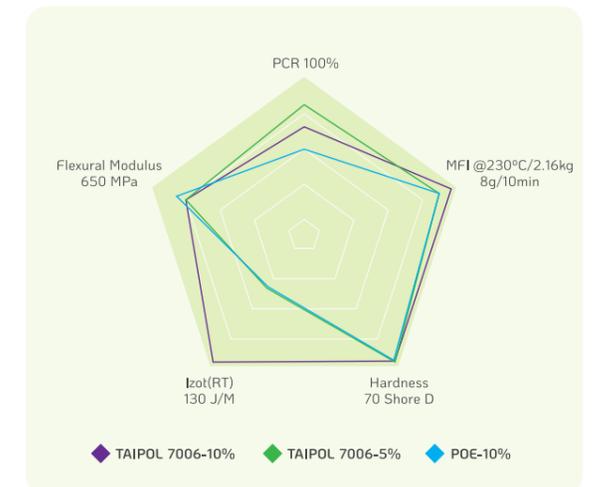
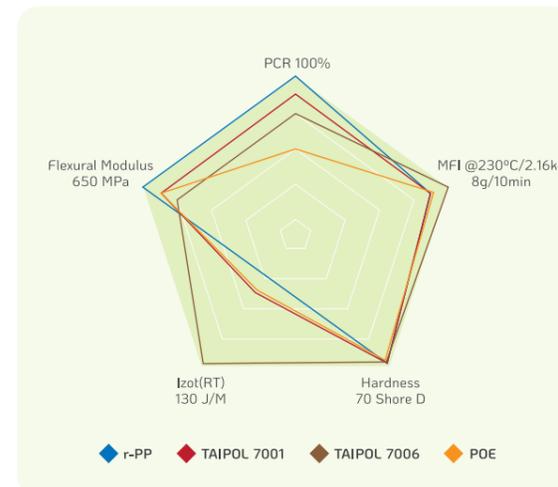
RECYCLED PP TOUGHENING SOLUTION ENHANCED WITH 10% rTPE MODIFIER



* PCR content increased from 90% to 93-97% depending on the rTPE grade.
**Impact strength improvement ranges from 70% to 230%.



SMALL VOLUME, BALANCED EFFECT 5% rTPE PERFORMANCE DELIVERS PERFORMANCE EQUIVALENT TO 10% POE AS MODIFIER.



SBC ELASTOMERS ENHANCING AND REVITALIZING PCR PLASTICS

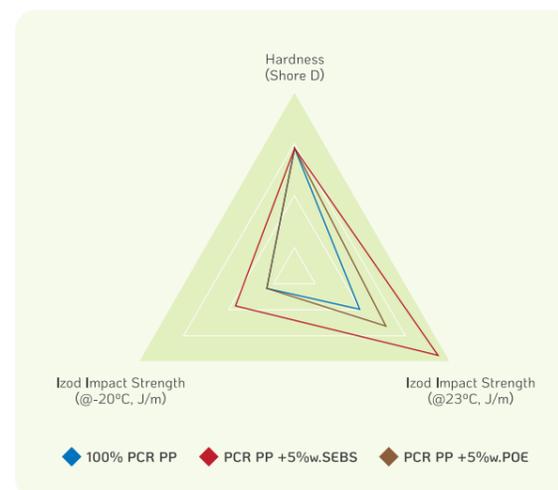
To improve the recyclability of plastics, the industry is moving toward mono-material design. TAIPOL and VECTOR SEBS elastomers enhance the impact resistance of polyolefin-based materials, significantly improving the physical properties of PCR and promoting its advanced recycling. With high flowability, excellent low-temperature impact resistance, superior rigidity, and low hardness, TAIPOL/VECTOR SEBS elastomers significantly boost the performance of recycled plastics. Resins modified with TAIPOL/VECTOR SEBS elastomers demonstrate greatly enhanced impact strength, making them ideal for upgrading recycled polypropylene (rPP) and recycled high-density polyethylene (rHDPE).

	TAIPOL SEBS 6014	TAIPOL SEBS 6245	VECTOR SEBS 8014D	VECTOR SEBS 8245D
Styrene, wt%	18	13	18	13
Melt Flow Rate, 230°C/2.16kg	5	3.5	5	3.5
Hardness, Shore A	70	40	70	40
Elongation at Break %	500	1000	500	1000
Product Form	Porous Pellet	Porous Pellet	Dense Pellet	Dense Pellet



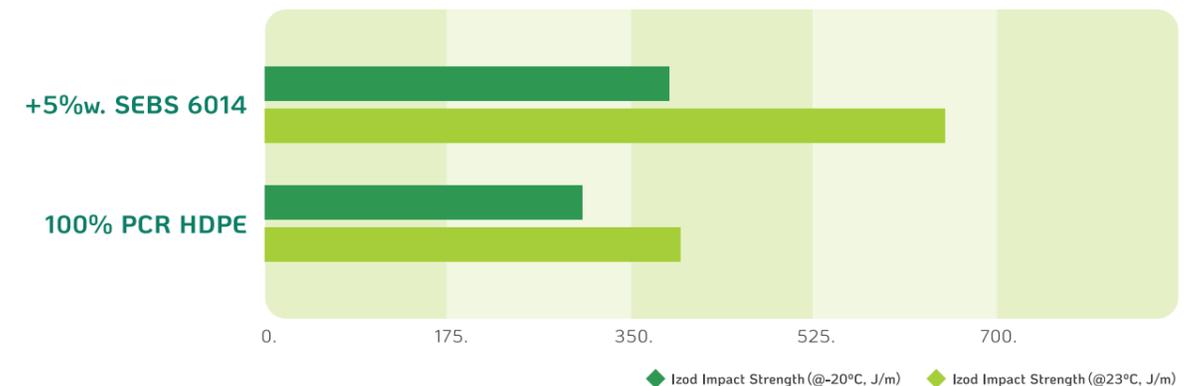
PERFORMANCE ENHANCEMENT OF IMPACT STRENGTH FOR RECYCLED POLYPROPYLENE (rPP)

• Incorporating 5% TAIPOL/VECTOR SEBS as a modifier significantly improves the impact strength of rPP, with a 95% increase at 23°C and an 83% increase at -20°C.



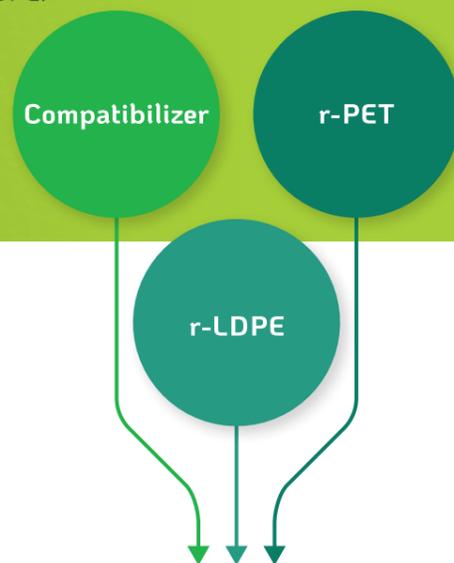
PERFORMANCE ENHANCEMENT OF IMPACT STRENGTH FOR RECYCLED HIGH DENSITY POLYETHYLENE (rHDPE)

• Adding 5% TAIPOL/VECTOR SEBS as a modifier significantly enhances the impact strength of rHDPE, yielding a 60% increase at 23°C and a 34% increase at -20°C.

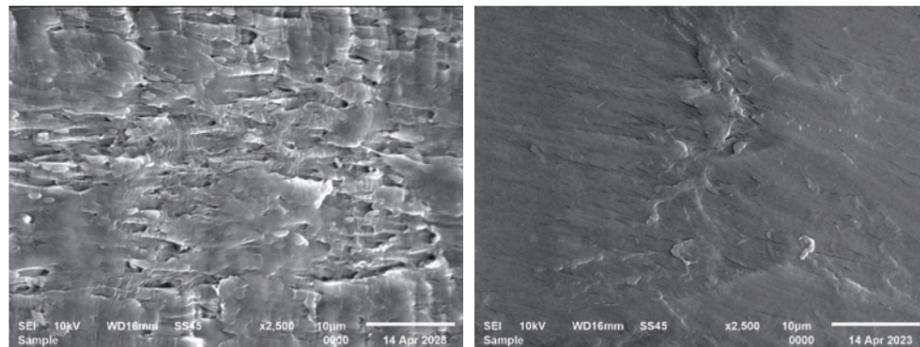


COMPATIBILIZERS FOR HETEROGENOUS PLASTICS IMPROVING RECYCLING EFFICIENCY

The recycling industry continues to face challenges with heterogenous plastics, particularly in flexible packaging made of multi-layer composite materials. Recycling these difficult-to-separate materials remains a key issue. To support the recycling and reuse of heterogenous plastics, TSRC's TAIPOL MA-SEBS compatibilizer enhances recycling efficiency, especially in improving the compatibility of rPET and rLDPE.



SEM Micrographs



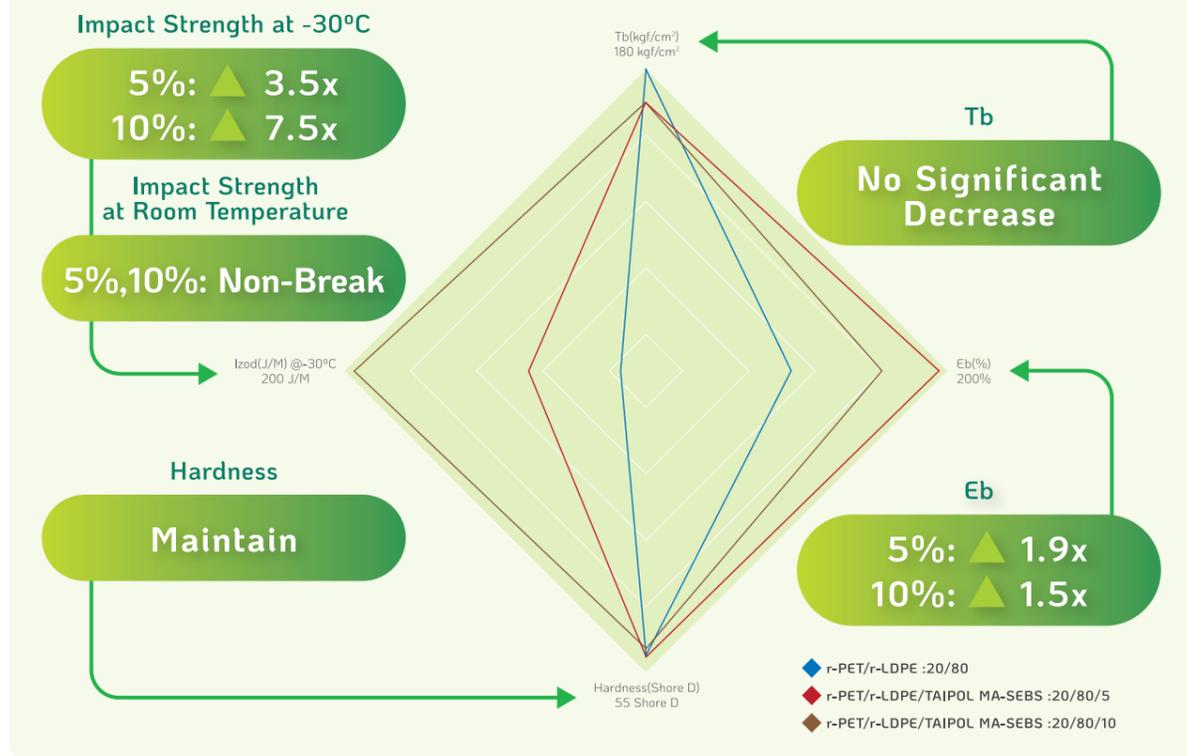
w/o Compatibilizer
r-PET/r-LDPE :20/80

with Compatibilizer
r-PET/r-LDPE/TAIPOL MA-SEBS :20/80/5

TAIPOL MA-SEBS 7126

TAIPOL MA-SEBS 7131

Styrene, wt%	29	29
Melt Flow Rate, 230°C/5kg	20	10
Hardness, Shore A	73	75



- Adding 5% TAIPOL compatibilizer enhances impact strength at -30°C by 3.5 times, while a 10% addition boosts it by 7.5 times.
- With 5% TAIPOL compatibilizer, the elongation rate increases by 1.9 times, and with 10%, it increases by 1.5 times. Impact strength at room temperature remains unbreakable with both 5% and 10% additions.
- Hardness and tensile strength are maintained without compromise.



ISCC PLUS CERTIFIED SBC ELASTOMERS

TSRC's ISCC PLUS certificated SBC Elastomers further expands our sustainable product portfolio, focusing on circular economy solutions. Produced from bio-based feedstocks, these SBC products allow compounders, formulators, and brand owners to adopt a mass balance approach with ISCC PLUS certification, significantly reducing their carbon footprint.



ABOUT TSRC

For over 50 years, TSRC has been dedicated to providing Styrenic Block Copolymer (SBC) solutions. Widely applied in adhesives, hygiene materials, medical packaging materials, and automotive applications. TSRC collaborates closely with customers to create products that are safer, healthier, more sustainable, and eco-friendly.

TSRC regards corporate sustainability as a core mission, proactively partnering with upstream and downstream partners to develop environmentally friendly solutions, including creating low-carbon emission and eco-friendly technologies. SBC materials are recyclable, helping to reduce the environmental impact of disposable waste. Additionally, the use of SBC materials can effectively reduce energy consumption in production, avoid the use of organic solvents, and promote the development of green products based on renewable materials. TSRC takes real actions to provide environmentally sustainable solutions, contributing to global sustainability and protecting the future of our planet. For more information, visit www.tsrc.com.tw

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