



Compatibilization Series Product Guide

The CirKular+™ Compatibilization Series represents a family of block copolymers based on polystyrene and polyethylene/butylene rubber brought to market by Kraton Polymers. CirKular+™ products are multi-resin compatibilizers and performance enhancement additives for upcycling mixed post-consumer resin (PCR) and post-industrial resin (PIR) recycling streams. CirKular+™ can upgrade the performance of PCR and PIR streams to bring cost effective solutions suitable for multiple end use applications. In addition to modification of the recycling streams, CirKular+ additives enable efficient bioplastics performance enhancement (e.g. Polylactic Acid).

Depending on the target performance requirements and the specific formulation, typical levels of CirKular+ addition range from 3 to 5% weight of the total formulation. CirKular+™ Compatibilization Series grades are manufactured in North America and are supplied in the form of dusted pellets in foil lined bags.

Compatibilization series includes three grades:
C1000, C1010 and C1010 (50% recycled)

Property	Test Method	C1000	C1010
Melt Flow, 230 °C and 5 kg (g/10min)	ASTM D 1238	22	34
Tensile Strength* (psi)	ASTM D 412	1360	390
Elongation at Break* (%)	ASTM D 412	395	361
Hardness, 10 s* (Shore A)	ASTM D 2240	74	62
Specific Gravity	ASTM D 792	0.91	0.9

* Determined on sample injection molded at 205 °C

These are typical values and should not be used to set specifications.

Versatile End Use, Processing and Functionality

Compounding and Dry Blending
Extrusion, Injection and Blow Molding
Films and Thermoforming
Multi-layer Structure as a Tie Layer

Recommended Processing Conditions Guide is available on request and should be reviewed before use.

Potential Applications

Rigid Packaging (Food or Non-food)¹
Flexible Packaging and Films
Automotive
Consumer Products
Industrial
Building and Construction

¹FDA Food Contact status provided upon request

Features & Benefits

End Product Durability and Aesthetics

- ③ Superior mechanical properties: Impact strength at room and low temperature
- ③ Flexibility in tailoring properties: Tailored balance between stiffness and impact
- ③ Increased recyclate homogeneity and compatibility: Enhanced processability
- ③ Improved surface finish and colorability

Multi-material Design Flexibility

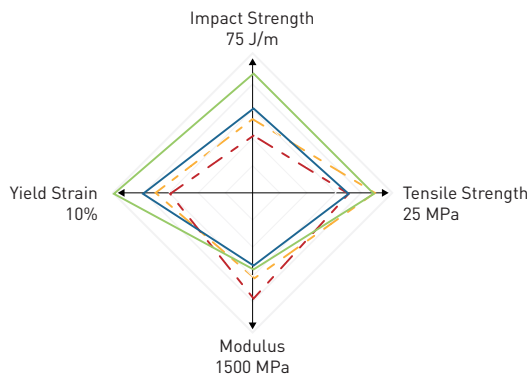
CirKular+™ products offer improved multi-resin compatibility across virgin plastics, bioplastics and post-consumer and post-industrial resin waste streams such as:

- ③ Bioplastics: Polylactic acid
- ③ Polyolefins and polyolefinic blends: PP, HDPE, MDPE, LLDPE and LDPE, metallocenes
- ③ Polystyrene and high impact polystyrene
- ③ Polar resins: PET, polyamides and nylon, PC, ABS, EVOH, PVA, EVA
- ③ Wood plastic composites

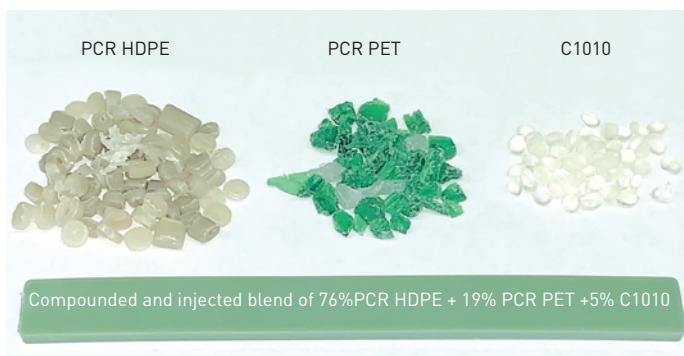
Increased End Product Circularity

- ③ Higher post-consumer and post-industrial content
- ③ Improved end life recyclability and reusability of end product
- ③ Positive environmental impact with lower CO₂ emissions and plastic waste reduction

Polyolefin Blends (contaminated with PET) Compatibilization Benchmarking



- PCR HDPE/PCR PET (80/20)
- PCR HDPE/PCR PET + 5% w. C1010
- PCR PP/PCR PET (80/20)
- PCR PP/PCR PET + 10% w. C1010



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