

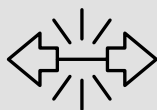


Vistamaxx™ performance polymers

Vistamaxx™ performance polymers — for improved product quality, helping enable higher recycle (PIR) incorporation



Better
processability



Similar tenacity & elongation
with increased PIR content



Compound
cost reduction

Data and results presented herein apply specifically to the noted application under this fact sheet. Your results may differ depending on factors such as operating conditions, equipment and materials used.

Raffia is the fastest growing sector of the polypropylene (PP) market, and woven sacks represent a significant portion of its global consumption. Demand of raffia PP woven fabric is mainly driven by packaging needs within the infrastructure and industrial segments for products including cement, fertilizers, chemicals, food grains, sugar and vegetables, which are essentially packed into these sacks.

The process starts by extruding raffia tapes that are sent to circular weaving machines (looms) to form fabric. Once the fabric is woven, it can be coated with polymer. Through the bag conversion process, the extrusion-coated woven fabric can then be made into woven sacks, flexible intermediate bulk containers (FIBC's) or block bottom bags.

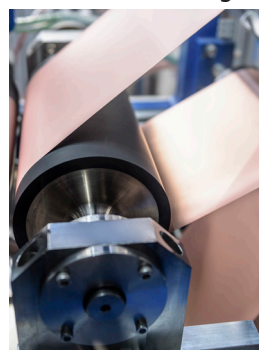
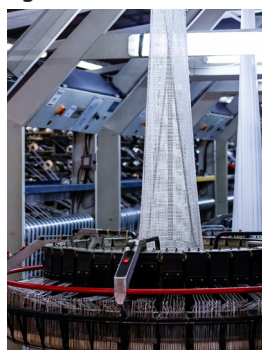
High-level manufacturing process for PP woven bags

Tape extrusion

Weaving

Extrusion coating

Bag conversion



Significant production waste is generated throughout the PP woven fabric-making process.

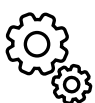
Key performance properties and potential benefits of Vistamaxx™ performance polymers

Acting as polymer modifiers, Vistamaxx performance polymers add value to PP raffia tape because they deliver less tape breakage. Vistamaxx-based AFMB (anti-fibrillating masterbatch) helps to improve the elongation of the tape.

Today, manufacturers of PP raffia tapes are looking for added-value materials that help enable downgauging and production of lower denier tapes/fabrics, while maintaining or improving tenacity. This creates opportunities to reduce cost and lower tape breakage while manufacturing at faster line speeds and improving output.

Vistamaxx performance polymers can deliver improvements in these key areas primarily because they potentially offer enhanced tenacity and elongation compared to incumbent PP homo-polymers, which have limited ability to stretch. The inherent elongation property of Vistamaxx performance polymers means that the tapes in which it is used can be stretched more, yielding higher tenacity at lower denier. These attributes help manufacturers accommodate more Post Industry Recycle (PIR) – also referred to as rPP (recycled PP) – generated during the manufacturing and bag conversion process.

Potential benefits of Vistamaxx™ 3980 in higher PIR loading



Better processability

Vistamaxx performance polymers are versatile materials, with a molecular architecture that helps in better filler acceptance and dispersion, and acts as compatibilizer leading to higher PIR loading. The Vistamaxx performance polymer-based solution demonstrates easy processability, even at lower processing temperatures. It reduces tape breakage and powder deposition during the tape making and weaving process.



Similar tenacity & elongation properties, even with increased PIR content

Vistamaxx performance polymers are elastomeric materials. Their elastic behavior helps enable a higher stretch ratio. Higher elongation helps to reduce tape breakage during processing and enables better toughness during end use.



Compound cost reduction

Vistamaxx performance polymers help enable a drop-in solution with potential cost saving through increased PIR incorporation while maintaining mechanical properties, adding to the potential sustainability benefits. Higher PIR incorporation helps enable the circular economy.

Study formulation details

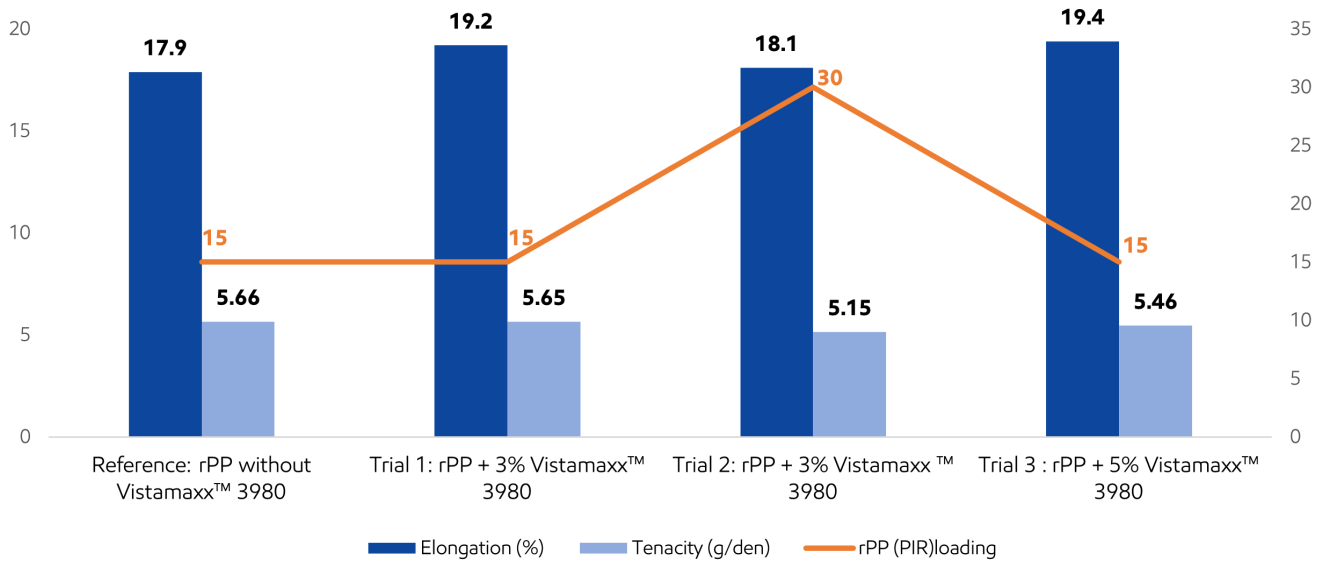
The following formulations have been evaluated to demonstrate the performance benefits of Vistamaxx performance polymers using Vistamaxx™ 3980 grade (8 MFR).

	Reference	Trial 1	Trial 2	Trial 3
Trial description	rPP without Vistamaxx 3980	rPP + 3% Vistamaxx 3980	rPP + 3% Vistamaxx 3980	rPP + 5% Vistamaxx 3980
Polypropylene (~3 MFR)	73	73	58	73
rPP (PIR)	15	--	--	--
97% rPP+3%Vistamaxx™ 3980	--	15	30	--
95% rPP+ 5%Vistamaxx™ 3980	--	--	--	15
AFMB and other additives	Standard dosage			
Total	100	100	100	100

*Notes

- Reference formulation is with 15% PIR without Vistamaxx performance polymers. Trial formulations are based on Vistamaxx blended with PIR to make recycle blends.
- rPP represents recycled PP (PIR); PIR (~5-10% ash content) is used to make recycle blends.
- AFMB and other additives loading remained same for all formulations.
- Vistamaxx performance polymers addition is done through side feeder and controlled through volumetric feeder control available on the side feeder of the extruder.
- Quality of the palletization was observed to be good, and the process was very smooth.
- MFR (Melt flow Rate) – g/10 min 230°C/2.16 kg

Results and discussion



Traceability: LIMS – R2402-018962

Test method: Elongation at Break and Tenacity – ExxonMobil Test method (OP178 – BRDTC)

Conclusion

Vistamaxx™ performance polymers demonstrated the possibility to accommodate more post-industrial recycled (PIR) generated during PP raffia fabric manufacturing and bag conversion process by maintaining tenacity as well as elongation properties. Process parameters were observed to be unaffected, with higher PIR loading with Vistamaxx™ performance polymer-based solution.

To learn more, visit [exxonmobilchemical.com/masterbatch](https://www.exxonmobilchemical.com/masterbatch)

What's new: ExxonMobil Signature Polymers

All our polymers are now positioned under a single portfolio brand: Signature Polymers. The aim is to simplify our product architecture and naming to improve portfolio navigation for you. We would like to stress that our commitment to high quality products remains the same. The composition of the products are unchanged, it is only the names that updated. Grade slate of Vistamaxx™ performance polymers will remain unchanged.

Want to see what's changed in our portfolio? Go to exxonmobilchemical.com/sptransform

ExxonMobil
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Bring your impossible

ExxonMobil Signature Polymers was born from the belief that people fuel progress. From automotive and construction to packaging, agriculture, industrial, and beyond, we leverage the scale and reach of ExxonMobil to deliver the insights and innovations that empower our diverse, global partners to take their businesses to new heights. We continuously work to provide the listen-first, service-driven, game-changing collaboration that unlocks opportunities for our partners and advances their business goals.



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