



Sustainable heavy duty sack films containing 50% post-consumer recycled content maintain performance



Uses recycled material



Film integrity



Bag drop performance



Easy processability

Challenge:

Contribute to a more circular economy by developing heavy duty sack (HDS) films containing PCR content, while maintaining mechanical properties and thickness

The Selene Group, a leading polyethylene (PE) film converter and recycler based in Italy, wanted to develop heavy duty sack films (Selene NextBag™) containing 50% post-consumer recycled (PCR) PE (Selene Premium Recycle Polymer) content in response to brand owner commitments, consumer feedback and regulatory changes.

"As a converting and recycling company, we can help the value chain respond to evolving sustainability needs by including PCR material in our solutions," said Luca Massari, R&D Manager, Selene. "We need to ensure that the heavy duty sacks fulfill their primary function of protecting and transporting products effectively, maintaining the mechanical properties and thickness of the film. Plus, the end user's machine settings, such as sealing bars temperature and output, should not need to change, so that it's an easy solution to adopt."

Solution:

Include 50% PCR PE with Exceed™ XP and Exceed™ performance PE polymers for high integrity heavy duty sacks

ExxonMobil and Selene worked together to test formulations for heavy duty sack films based on 50% high-quality PCR PE combined with Exceed™ XP and Exceed™ performance PE polymers which help boost performance in recycled solutions. The PCR PE is sourced from a logistics center where resin bags are opened and then emptied to fill bulk trucks. The waste bags are sorted, washed, de-inked, and re-pelletized by Selene into a premium recycled product. A thorough risk assessment of the final resin bag material is conducted by Selene to confirm product safety for the intended use.

The inclusion of **Exceed™ XP 8318** in the formulation delivers excellent toughness to the heavy duty sack films, compensating for possible degradation in the properties of the PCR PE during the recycling process. The inclusion of **Exceed™ 1012** increases bag drop resistance and enhances sealing performance.



Pallets with Selene NextBag™ HDS which contain 50% PCR PE passed acceleration tests at ESTL, according to EUMOS40509.

"Compliance to fulfill regulatory obligations and safety assurance for the intended use are key focus areas," said Klaus Urbano, Sales Director, Selene. "We undertake a rigorous process to ensure the PCR PE is a consistent high quality. Recycling material traceability and adequacy are confirmed by the appropriate documentation."



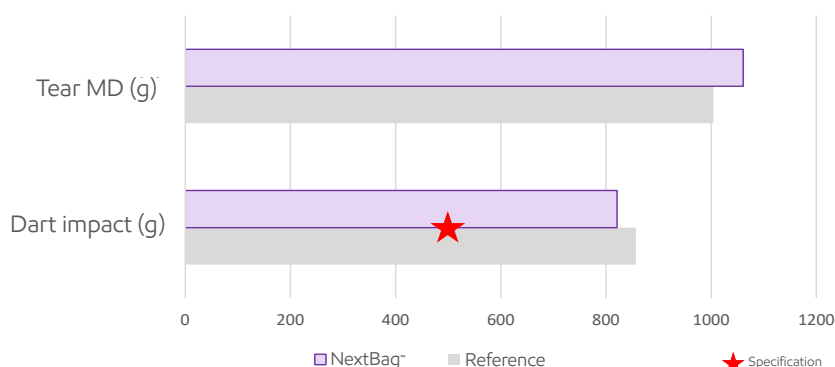
The recycling line at the Santa-Margherita plant, Italy where bags are sorted, washed, de-inked, and re-pelletized into a premium recycled product.

Results:

High-integrity heavy duty sacks containing 50% PCR PE that are easy to process

NextBag™ by Selene incorporate Exceed™ and Exceed™ XP performance PE polymers and deliver:

- A sustainable solution that incorporates 50% PCR PE.
- Mechanical properties in line with industry standards for high integrity sacks.
- Bag drop performance that outperforms reference virgin PE formulations.
- Creep resistance and pallet stability: pallets passed acceleration tests according to EUMOS40509.
- No foreseeable operational changes to the end-user's bagging machine settings (sealing bars temperature, output).



The dart impact and tear MD properties of the HDS which contain 50% PCR PE (NextBag™) and Exceed XP 8318 are similar to the virgin reference at the same thickness (125mic).

Data from tests performed by or on behalf of ExxonMobil.

“The solution fulfills demand for a sustainable approach to flexible film applications by introducing post-consumer recycled (PCR) content,” said Marco Rubertà, Technical Director, Selene. “The use of recycled plastic in other flexible packaging films is gaining traction in Europe and we are experiencing considerable interest from the value chain.”

Why ExxonMobil PE? Why today?

tomorrow's
performance
today

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