

# High-Performance FFS Tube with 60% PCR and 25% Output Increase

GCR and Selene validated a high-performance FFS tube structure combining CICALIXT® rLDPE and GRANIC® to achieve 60% PCR content, improve processing efficiency, and reduce CO2 impact in industrial film production.

## Challenge

FFS tube used for heavy-duty industrial packaging must deliver strength, sealing reliability, and consistent performance on high-speed filling lines.

Selene aimed to significantly increase recycled content in FFS tube in response to upcoming **PPWR requirements**, while maintaining the process stability, line efficiency, and film quality required for industrial production.

Conventional PCR materials can create key limitations in blown film extrusion, including variable quality, higher filter pressure, bubble instability, and reduced output.

The challenge was to achieve **60% PCR content without compromising productivity, process stability, or final film performance.**



**60%  
PCR  
CONTENT**



**+25%  
Output**



**Excellent  
Printability**



**70%  
CO2  
Reduction**



**Mechanical  
performance  
maintained**

## Solution

GCR and Selene developed an optimized formulation for a 3-layer, 120 µm **FFS tube** based on a clear **material-performance strategy**.

- ▀ **CICALIXT® rLDPE** provided a high-quality recycled base with controlled feedstock, high cleanliness, and stable extrusion behavior.
- ▀ **GRANIC®** contributed to process stability and helped balance film performance in production.

Validated Structure  
**60% CICALIXT® rLDPE**  
**20% GRANIC®**

**This formulation was developed to increase recycled content while remaining compatible with high-output industrial film extrusion.**

## Results

- ▀ **60% PCR content** achieved in the FFS tube structure.
- ▀ **+25% output increase** achieved without compromising film integrity.
- ▀ **Mechanical performance maintained** for industrial FFS handling.
- ▀ **Lower filter pressure**, supporting smoother and more reliable extrusion.
- ▀ **Lower processing temperature.**
- ▀ **Improved bubble stability.**
- ▀ **Smooth and homogeneous film surface.**
- ▀ **Stable sealing and excellent printability.**
- ▀ **70% CO2 reduction** from the combined solution.

GCR and Selene demonstrate that 60% PCR in FFS tube can be achieved with stable, high-output processing. By combining **CICALIXT® rLDPE** and **GRANIC®**, the validated structure delivered higher output and lower CO2 impact, helping converters scale recycled content with greater confidence.