



Innovating  
our sustainable  
tomorrow

# Flexible Packaging

High-Performance  
Sustainable Plastic Solutions

# Innovating our Sustainable tomorrow

GCR develops and produces high-performance, sustainable plastic solutions, serving brand owners and plastic processors in search of recycled and **recyclable plastics** and **mineral-based compounds**.

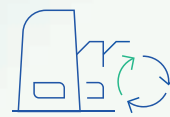
We unlock value for our partners, enabling their **growth** and enhancing their market position thanks to our firm commitment to **innovation** and **sustainability**.

As a result, our materials are more environmentally friendly, **lowering carbon footprint and reducing virgin plastic use without relinquishing the features and performance expected from virgin plastic**.

# A global benchmark



Founded in  
**2001**



Production facilities  
**2 production  
plants**

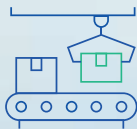
La Bisbal del Penedès, Castellet  
i La Gornal



Headquarters  
**La Bisbal del  
Penedès**  
Tarragona (Spain)



**+300  
Employees**  
24 nationalities



Production Capacity  
**+500.000 MT/y**



International presence  
**+100 countries**  
Europe/ Asia/ America/ Africa

# What makes us unique?



## Customer Centric

At GCR, we thrive on close collaboration with our customers and brand owners. There is undeniable power in doing business together, since we progress and succeed collectively.



## Quality Obsession

Quality is not an option but a principle! Our dedication to maintaining high-quality standards, combined with state-of-the-art technology and exceptional expertise, is one of the cornerstones of our pride.



## Material Science

With over 20 years of experience, we have built a strong foundation, which has allowed us to provide customised and specialised high-performance solutions in specific markets. Our company's adaptability and agility make us unique in delivering exceptional outcomes.



## Innovation Hub

We have set up a dedicated space for innovation and co-creation with our clients. Here, we leverage emerging technologies, expert insights, and a user-centric approach to swiftly introduce sustainable solutions to the market.





# Certification

Committed to the highest standards



## ISO 9001

Quality Management system

## ISO 14001

Environmental Management system



## ISCC PLUS

Circular and bio-based products



## PAS 2050 - ISO 14067

Carbon Footprint



## UNE - EN 15343

Recycled Content & Traceability



## Recyclass

Recycling Process for pre-consumer & post-consumer



## Biodegradability

Home & Industrial Compost, Soil Compost



## OCS - Operation Clean Sweep

Zero Pellet Loss



# Why sustainability is important

What is the business value of sustainability?

According to the Paris Climate Agreement, a maximum temperature increase of 2 °C has been set, but the goal of the international community is to limit that increase to 1.5 °C.

A word of warning: if the current trend continues, we would be heading towards a scenario of around +3 °C by 2100.

- ▀ Temperature increase
- ▀ Extreme phenomena
- ▀ Food insecurity
- ▀ Water scarcity
- ▀ Species extinction and displacement
- ▀ Irreversible sea level rise



**246,000\***

Tonnes of CO<sub>2</sub> emissions saved to our customers thanks to our solutions.

## Sustainable investment and its relevance in ESG

Companies are already incorporating sustainability criteria at the time of selecting their **partners** (suppliers, clients, investors, etc.).

**Investors** are closely focused on companies that have a business strategy with ESG criteria.

**This is not a trend** but a reality that reflects a shift in investor behaviour.

## How companies can help mitigate the effects of global warming:

- ▀ Reduce their impact on the planet by establishing science-based CO<sub>2</sub> emissions reduction goals
- ▀ Many Sustainability Pledges for 2030, but not much time left.

## Company sustainability risks due to sustainability goals failure:

- ▀ Jobs at risk
- ▀ Economic penalties
- ▀ Activity penalties
- ▀ Investor blockage
- ▀ Supplier entry barriers





# Life Cycle Assessment

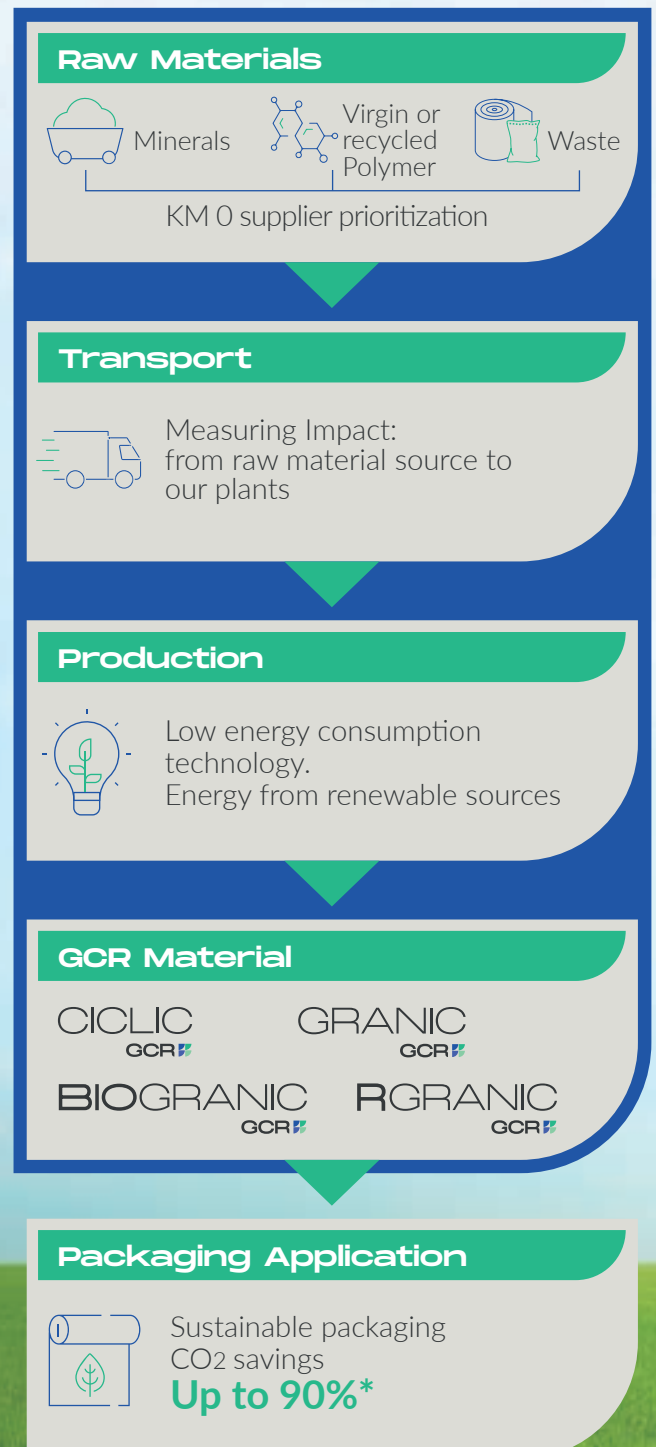
We know that every step matters

**LCA** is a systematic approach that evaluates the environmental impact of a product or service throughout its entire life cycle, from raw material extraction to disposal.

**BENEFITS:** calculating the LCA enables customers to make environmentally conscious choices, sustainable fuel demands, support responsible businesses, and collectively contribute to a more sustainable future.

- Informed decision-making
- Comparative analysis
- Eco-friendly design
- Reduced environmental footprint

We conduct **'Cradle-to-Gate' Life-Cycle Assessments** for our products in compliance with ISO 14040 series standards, and our Carbon Footprint is certified pursuant to the PAS 2050 guidelines.



\*Our products can potentially reduce CO2 emissions by up to 90% in specific applications. However, actual reductions may vary based on the final application and the product used. We work with customers to identify suitable products for optimal CO2 reduction. Composition example for Granic® 282 in Hygienic packaging : By adding 30% Granic® 282 +70% mLLDPE virgin polymer you can reduce 21% of CO2 as opposed to using 100% mLLDPE virgin polymer in hygienic packaging .

# Accelerating Your Go-to-Market with Sustainable Innovation and Advanced Capabilities

Innovation Hub equipped with cutting-edge technology

GCR Innovation Hub provides a unique **2000 m<sup>2</sup> co-creation space** in which to run collaborative projects and benefit from our technical expertise, capabilities, and cutting-edge technology.

With a team of **+40 experts**, we also create value during **in-house sessions** by working closely alongside our clients.

## +40 Expert Technical Advisors



Over 40 highly knowledgeable technical advisors are ready to provide you with expert guidance and support at any stage of your project.

## Testing & Homologation



Sustainable Material Science in new formulations, pilot plant trials, Lab analysis, testing and up-scaling to production.

## Dedicated R&D Centre



Developing solutions that minimise environmental impact.

## Industrial Scale Pilot Plant



Incubation and proof of concept from development to pilot plant and final large-scale production.

**Together, we can turn your product challenges into Success Stories**





# Empowering Seamless Development from Concept to Production

Our **Pilot Plant** serves as a versatile and fully-equipped testing ground, enabling seamless upscaling and development opportunities for projects at any stage. With our state-of-the-art equipment and expertise, we offer the development of new formulations, pilot plant trials, testing, and upscaling to production, providing

customization capabilities for applications of both Ciclic® Recycled polyolefins and Granic® mineral masterbatch ranges. Whether you are at the early stages of product development or seeking to optimize existing processes, our Pilot Plant supports your journey towards innovation and sustainable solutions.



## Cutting-Edge Equipment and Advanced Functionalities



### **5-Layer Cast and Blown Film Extrusion System**

Versatile, modular, quick-change device for blown and cast film that can be expanded to include additional layers. The system features 5-layer co-extrusion technology, 20 components, an MDO stretching unit, and corona treatment for surface modification of the produced films. With an 800 mm width, 100 m/min outlet speed and 350 kg/h throughput, it delivers high-performance capabilities. It handles various materials, from recycled polyolefins to mineral concentrates of any kind.



### **Engel 300 t Injection Molding Machine**

Injection molding machine equipped to test-run all types of injected parts in real industrial conditions, including components for the automotive, appliances, and agricultural sectors.



### **Collin Twin-Screw Compounder Extruder**

Fully customizable, especially suitable for high addition rates of mineral and functional fillers. Configured to handle sensitive materials, including biopolymers, natural fibers, and others.



### **Pipe Extrusion System equipped with Collin Single-Screw Extruder**

Versatile and modular equipment for pipe extrusion, covering a wide range of diameters and thicknesses.

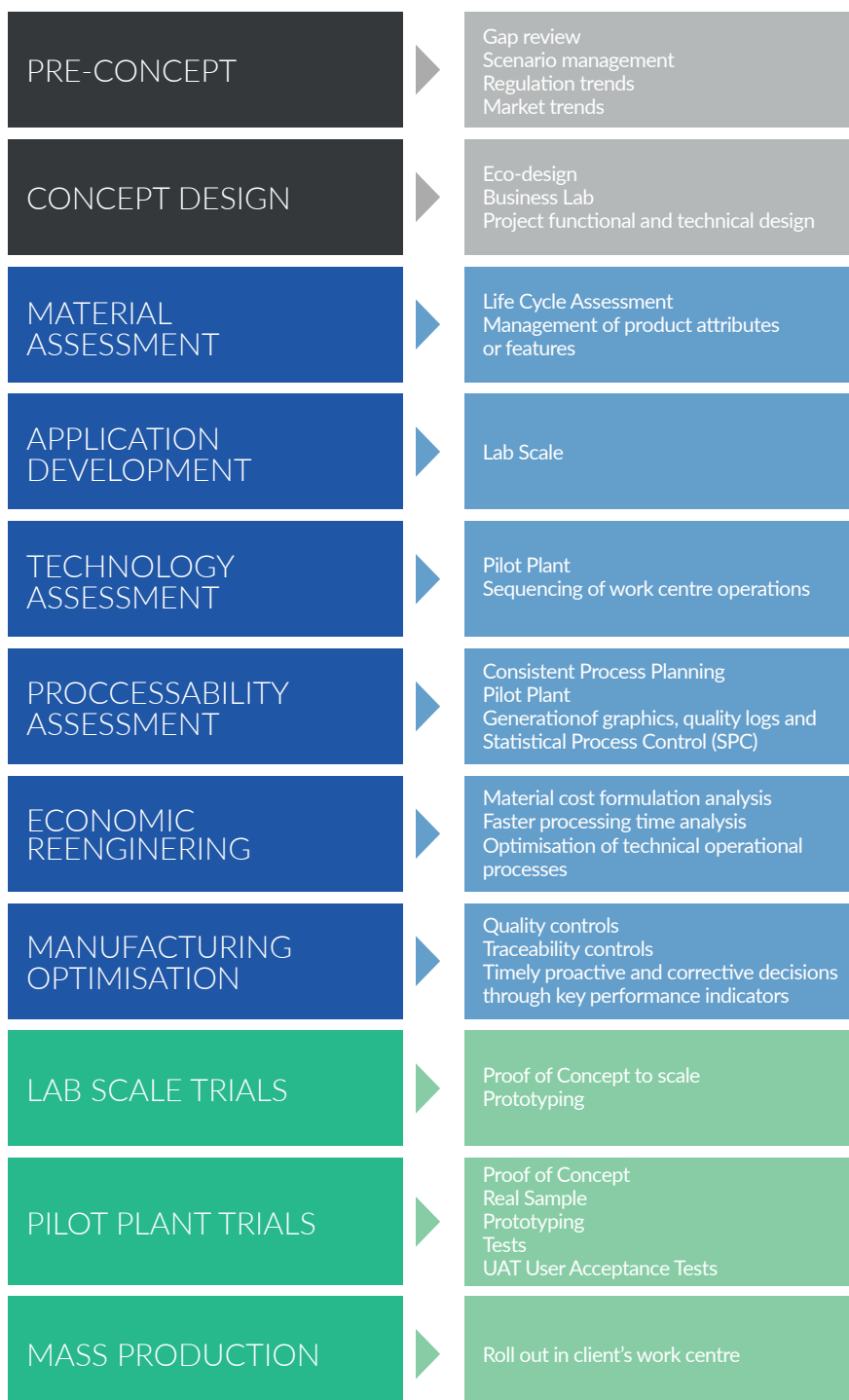


### **Filament Extrusion System equipped with two Collin MDO units**

System capable of producing monofilaments from a variety of materials for diverse applications, including raffia, yarns, and others.

# Supporting developments at any stage

End-to-end-solutions



## Our Deliverables

- ▀ Co-creation space
- ▀ Discovery of new ideas
- ▀ Accelerate action to circularity
- ▀ Turnkey Projects
- ▀ Recyclability Consultancy Services

Note: Developments are subject to volume threshold and binding agreement



# Sustainable Flexible Packaging

Understanding  
industry challenges



# Flexible Packaging

Understanding industry challenges

## CUSTOMER NEEDS & TRENDS

Businesses are actively refining packaging designs to:

- ▶ Create memorable **experiences**
- ▶ **Stand out** in the market
- ▶ Address **environmental** concerns
- ▶ Meet sustainability goals

## OUR EXPERTISE

At GCR, **we work to make sure you don't have to sacrifice PERFORMANCE for improved SUSTAINABILITY.**

At our Innovation Hub we create, test, and improve sustainable solutions.

## STANDARD PACKAGING REQUIREMENTS

The following requirements are likely to resonate with you, and that's precisely where our expertise lies:

- ▶ Effortless Opening Convenience
- ▶ Hermetic Seal
- ▶ Extended Shelf Life
- ▶ Barrier Properties
- ▶ High-Quality Printing
- ▶ Lightweight Solutions
- ▶ Reducing Carbon Footprint
- ▶ Recyclability: Mono PE Film designed for recycling



# Flexible Packaging Challenges

## Performance Challenges

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- ▮ Effective barrier properties
- ▮ Meeting food safety regulations
- ▮ Low energy consumption
- ▮ Smooth processability
- ▮ High-quality printing

## Recycling Challenges

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- ▮ Consistent performance
- ▮ Match or surpass the performance of prime POs
- ▮ Seeking narrow specifications
- ▮ SOI's under control
- ▮ Material compatibilization
- ▮ Reliable feedstock sources

## Sustainability Challenges

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- ▮ Reduce: material downgauging
- ▮ Reuse: reused or repurposed
- ▮ Recycle: monomaterials
- ▮ Recycled Content: High-quality PCR resins
- ▮ Renewable Materials: recycled & biobased
- ▮ EOL: designed for recyclability or biodegradation



# Flexible Packaging Solutions

Finding sustainable solutions that can meet the required properties and performance is key to reduce the environmental impact of flexible packaging.

## PRODUCT PORTFOLIO

### Recycled Polyolefins

**CICLIC**  
GCR

Ciclic® is a high-quality recycled and recyclable polyolefin product line.

### Mineral Masterbatches

**GRANIC**   **RGRANIC**  
GCR   GCR

Granic® is our high-performance mineral-based concentrate product line.

## SERVICE LEVELS

- ▮ Technical Service
- ▮ Material Traceability Monitoring
- ▮ Certifications
- ▮ Cradle to Gate LCA Calculation (backed by UNESCO Chair in Life Cycle and Climate Change)

## INNOVATION HUB

Unmatched expertise and resources, driving innovations to tackle market challenges effectively.

Customisation possibilities\*.

### Driving the Circular Economy

- ▮ Understanding PCR Upcycling
- ▮ Designing for recyclability
- ▮ Assessing Recyclability

### Enhancing Performance and Sustainability

- ▮ Innovative Compatibiliser Technology
- ▮ Neatly Blending & Odourless Technology
- ▮ Lightweight Solutions
- ▮ Pioneering Compostable Solutions
- ▮ Reducing Carbon Footprint and LCA assessment

\*Subject to MRQ and LT agreements

# Sustainable Flexible Packaging Solutions



# Hygienic wrap packaging

## Granic® LLDPE – Ultra-Fine CaCO<sub>3</sub>

**Granic®** is a specialised mineral masterbatch designed to deliver a matte effect while preserving the transparency of PE flexible packaging. Excellent alternative solution to HDPE materials.

### PERFORMANCE

- ▀ **Balanced Stiffness:** Considerably boosts LLDPE rigidity, matching HDPE stiffness
- ▀ **Mechanical properties:** Significantly enhances strength compared to HDPE
- ▀ **Matting effect:** Adds a matte appearance and silky touch to PE film
- ▀ **Transparency:** Maintains transparency with a similar refractive index to PE resins

### KEY ADVANTAGES

- ▀ Matting effect
- ▀ High transparency
- ▀ Better mechanical properties than HDPE (e.g., Tear and Impact Resistance)
- ▀ Good optical properties
- ▀ Increase in barrier properties of LLDPE
- ▀ Same sealing strength at a lower sealing temperature (for example, instead of 115 °C, it can be reduced to 105 °C)

### SUSTAINABILITY

#### Composition Example:

70% mLLDPE + 30% Granic® LLDPE | CaCO<sub>3</sub>

**21% CO<sub>2</sub> reduction**



- ▀ Lower Carbon Footprint
- ▀ Energy Efficiency
- ▀ Granic® is **Pas 2050** Carbon Footprint certified
- ▀ A complete LCA can be performed on Granic®





# Hygienic wrap packaging

## Ciclic® White – rLDPE PCR

### KEY ADVANTAGES

- ▶ Eco-friendly solution for personal care products
- ▶ Odour-free
- ▶ Good printability
- ▶ Low volatile and moisture content
- ▶ 100% recycled and environmentally friendly product

### SUSTAINABILITY

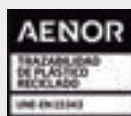
Ciclic® added at 50% content

Ciclic® rLDPE is 0.202 kg of CO<sub>2</sub> equivalents per kg

**45% CO<sub>2</sub> reduction**



Product Carbon  
Footprint  
Regular  
Surveillance



ISO 14067

**Ciclic®** White, a high-quality LDPE PCR, is designed for hygienic wrap packaging. It replaces 100% LDPE virgin polymer, ensuring quality and sustainability in film applications.



# Labels, Wrap & Lamination Films

## Granic® Pearlised BOPP Film

**Granic®** is a calcium carbonate additive specially developed for pearlised cavitated BOPP films.

It provides an optimal balance between low density and stiffness, leading to high tensile strength films for a broad range of converting processes.



### PERFORMANCE

- Strength | Achieves optimal stiffness for high-speed converting stages such as cutting and drawing
- Optics | Provides an exceptional pearlescent effect
- Higher Dosage | With higher dosages, maintains the same film density and replaces a higher percentage of PP

### KEY PERFORMANCE

- Up to 40% dosage (core layer)
- Best cavitation performance (PSD design)
- High Opacity, Less TiO<sub>2</sub> needed
- Fewer Impurities (more whiteness)
- No Lubricants or Wax (no migration no delamination)
- No defects - no white spots
- Improved Mechanical Properties (higher elongation and modulus)
- Similar Gloss (or slightly higher)
- Uniform thickness (comparable to PBT solution)

### SUSTAINABILITY

- Lower Carbon Footprint
- Energy Efficiency
- Granic® is **Pas 2050** Carbon Footprint certified
- A complete LCA can be performed on Granic®



# Pouches

## Granic® LLDPE – Ultra-Fine CaCO<sub>3</sub>

### PERFORMANCE

- Structure= 3 Layers (20|60|20)
- Thickness= 113 µm. Granic® allows to reinforce the film and reduce thickness
- Granic® LLDPE | CaCO<sub>3</sub> can be used in the sealing layer at up to 25% to seal at lower temperatures

### KEY ADVANTAGES

- Enhanced mechanical properties
- Approved for Food Contact
- Good optical properties

### SUSTAINABILITY

#### Composition Example:

25% dosage of Granic in film

#### 20% CO<sub>2</sub> reduction

compared to using 100% LLDPE virgin polymer



- Lower Carbon Footprint
- Energy Efficiency
- Granic® is **Pas 2050** Carbon Footprint certified
- A complete LCA can be performed on Granic®

Granic® LLDPE | CaCO<sub>3</sub> is well-suited for pouch packaging applications, enhancing the mechanical properties of the material.



# PE Bags Improved barrier properties

## Granic® | Enhanced barrier properties

**Are you looking for a competitive and transparent MB Filler with enhanced barrier properties?**

**Granic®** offers a specialised mineral masterbatch grade designed to significantly improve the barrier properties of PE, including OTR and WVTR, while maintaining transparency.

### PERFORMANCE

Thickness: 30 µm  
Layer Ratio: 20/60/20 (ABC)

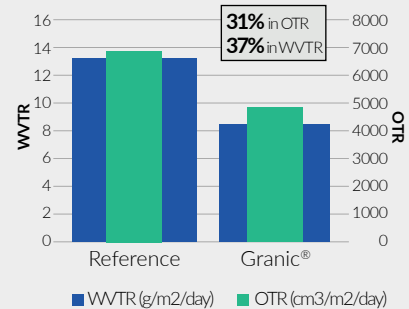
|       |
|-------|
| LLDPE |
| LLDPE |
| LLDPE |

Melt Pressure: 313 bar  
Motor Current: 61 Amp

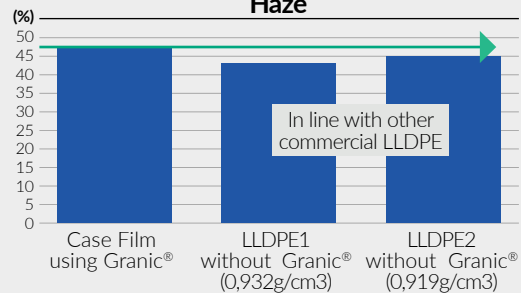
|                            |
|----------------------------|
| LLDPE                      |
| 70% LLDPE +<br>30% Granic® |
| LLDPE                      |

Melt Pressure: 256 bar  
Motor Current: 52 Amp  
**Total Granic®: 18%**

#### Barrier Properties



#### Haze



### KEY ADVANTAGES

- Barrier properties are significantly improved
- Good optical properties
- Excellent balance between stiffness and flexibility
- Great Performance
- Ease extrusion
- Energy Saving | less energy is needed to melt and homogenise the blend

### SUSTAINABILITY

- Lower Carbon Footprint
- Energy Efficiency
- Granic® is Pas 2050 Carbon Footprint certified
- A complete LCA can be performed on Granic®





# Paper-like Food Packaging

## Granic® HDPE – Ultra-Fine CaCO<sub>3</sub>

### PERFORMANCE

- ▶ Paper-like soft touch, natural appeal
- ▶ Excellent hot tack sealability
- ▶ Superior water vapor barrier
- ▶ Exceptional foldability, printability, and stiffness

### KEY ADVANTAGES

- ▶ Luxurious appearance
- ▶ Soft touch
- ▶ Natural look and feel
- ▶ Paper-like folding experience, adding body and stiffness to the packaging
- ▶ Superior Environmental Impact
- ▶ Cost Efficiency
- ▶ Food Contact & Animal Free

### SUSTAINABILITY

#### Up to 65% CO<sub>2</sub> Savings

- ▶ 50% Less Plastic Content in your Film
- ▶ 80%+ Natural Renewable Minerals in the MB
- ▶ Lower Carbon Footprint
- ▶ Energy Efficiency
- ▶ Granic® is Pas **2050 Carbon** Footprint certified
- ▶ A complete LCA can be performed on Granic®



**Granic®** is our special sustainable advanced mineral-based masterbatch specifically designed for Paper-Like Monolayer films. Ideal for food packaging and non-food applications. It offers a more environmentally friendly solution by replacing up to 50% of virgin polymer reducing CO<sub>2</sub> emissions by up to 65%, while enhancing the key mechanical properties essential for high-quality paper-like solutions.



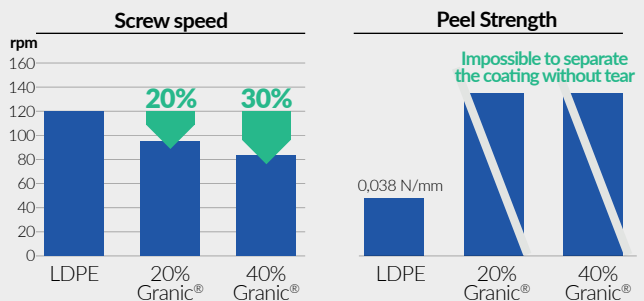
# Coating Sachets

## Granic® LDPE – CaCO<sub>3</sub>

Granic® provides a specialised mineral masterbatch tailored to meet the rigorous demands of the extrusion coating process, even under high-temperature conditions.

Its unique formulation blends specially treated CaCO<sub>3</sub> with a high-quality LDPE carrier, offering a sustainable solution that efficiently replaces substantial quantities of PE.

### PERFORMANCE



### KEY ADVANTAGES

- Excellent Processing | Enables high line speed without die build-up
- Adhesion | Outstanding adhesion to paper, cardboard, and aluminium
- Stable Sealing | Good sealing properties, ensuring airtight and secure packaging
- Energy Efficiency | Contributes to lower power consumption, promoting cost savings and sustainability

### SUSTAINABILITY

- Lower Carbon Footprint
- Energy Efficiency
- Granic® is Pas 2050 Carbon Footprint certified
- A complete LCA can be performed on Granic®

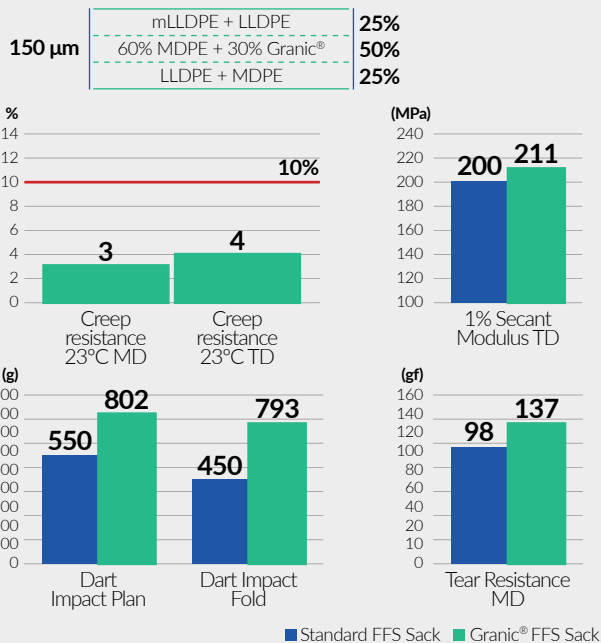


# Heavy Duty Sacks | FFS

- Delivered to over 100 countries, Including extreme climates

## Granic® STRENGTHENS FFS

### PERFORMANCE



Granic® provides a specialised mineral masterbatch formulated with highly technical and ultrafine CaCO<sub>3</sub>, ensuring an excellent dispersion rate. When combined with high-quality LLDPE, it significantly enhances the mechanical properties of the film, resulting in increased toughness and tear resistance.

### KEY ADVANTAGES

- Mechanical properties enhancement** | Impact and Tear testing
- Good resistance to creep** | Guaranteed, as elongation is kept far below the non-acceptance limitation
- Efficient Impact Energy Dissipation**
- Allows to achieve thickness reduction**

### SUSTAINABILITY

Granic® added at 30% content

**21% CO<sub>2</sub> reduction**

- Lower Carbon Footprint
- Energy Efficiency
- Granic® is **Pas 2050** Carbon Footprint certified
- A complete LCA can be performed on Granic®



# Flexible Tubes

## Granic® HDPE – CaCO<sub>3</sub>

Granic® provides a tailored mineral masterbatch for HDPE tubes, using fine calcium carbonate to enhance tube performance, particularly in varying temperatures.

### PERFORMANCE

**Stiffness and flexibility balance** | Granic® HDPE - CaCO<sub>3</sub> provides strength and an optimal balance between stiffness and flexibility.

### KEY ADVANTAGES

Dosage up to 30%

- Matte effect
- Soft touch
- Excellent processability
- Enhance dimensional stability

### SUSTAINABILITY

Granic® added at 30% content

**23% CO<sub>2</sub> reduction**



- Lower Carbon Footprint
- Energy Efficiency
- Granic® is **Pas 2050** Carbon Footprint certified
- A complete LCA can be performed on Granic®





# Collation Shrink Film

## PERFORMANCE

- Good optics
- Good processability
- Maintains Shrinkage up to a dosage of 30%

Note: Limited availability

## KEY ADVANTAGES

- Good tear resistance
- Allows for reverse printing. Film clarity
- Excellent processability
- Low gel and impurity content

## SUSTAINABILITY

LDPE prime is 1.95 kg of CO<sub>2</sub> equivalents per kg



Ciclic<sup>®</sup> rLDPE is 0.202 kg of CO<sub>2</sub> equivalents per kg



Ciclic<sup>®</sup> rLDPE at 50% content.



**45% CO<sub>2</sub> reduction**



Product Carbon  
Footprint  
Regular  
Surveillance



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## Ciclic<sup>®</sup> – rLDPE

Ciclic<sup>®</sup> rLDPE provides an outstanding mechanical performance when used in the central layer of collation film structures. It can successfully replace a significant amount of virgin polymer in transparent film, and even higher in opaque films.

It has been especially designed to replace partially or completely virgin polymer formulations. Ciclic<sup>®</sup> enables compliance with legal requirements for recycled content.



# Recyclable Soil & Fertiliser Bag

## B&W Films

### Ciclic® – rLDPE PCR

Ciclic® stands out as a premium rLDPE PCR solution, making it possible to replace up to 80% of LDPE virgin polymer while benefiting from its outstanding processability.

Ciclic® products are designed to replace high polymer content, enabling manufacturers to certify their products with labels such as Blue Angel.



#### PERFORMANCE

##### Sustainable Soil Bag 80% Ciclic

|                       |              |                          |      |
|-----------------------|--------------|--------------------------|------|
| <b>Thickness</b>      | 60 µm        | <b>T.Strength MD</b>     | 25N  |
| <b>Film structure</b> | 3 layer coex | <b>T.Strength CD</b>     | 25N  |
| <b>Capacity</b>       | 20 L         | <b>Impact Resistance</b> | 300g |
| <b>PCR Certified</b>  | RecyClass    |                          |      |

#### KEY ADVANTAGES

- **Enhanced Whiteness** | Ciclic® can save some % TiO2 MB thanks to its strong white colour
- **Successful Virgin Replacement** | Very good COF, puncture, dart and elongation performance. No impairment of mechanical properties
- **Smooth Production** | Contains no bubble-bursting gel
- **Good Printability**

#### SUSTAINABILITY

LDPE prime is 1.95 kg of CO2 equivalents per kg



Ciclic® rLDPE is 0.202 kg of CO2 equivalents per kg



Ciclic® rLDPE at 80% content



**72% CO2 reduction**



Product Carbon Footprint Regular Surveillance  
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# Recycled E-Commerce Protection

## Air cushions

### Ciclic® – rLLDPE PCR

#### PERFORMANCE

##### E-commerce Air Cushion

|                               |      |
|-------------------------------|------|
| Puncture Test (ASTM D5748)    | PASS |
| Tensile Strength (ASTM D882)  | PASS |
| COF Test (ASTM D 1894)        | PASS |
| Seal Window (Internal Method) | PASS |

#### KEY ADVANTAGES

- High Quality PCR** | Ciclic® runs smoothly in the blown film line at high quantities, enabling stable and high output film production
- Maintains Full Functionality** | No performance loss is appreciated in comparison with the original virgin polymer structure

#### SUSTAINABILITY

LLDPE prime is 1.93 kg of CO<sub>2</sub> equivalents per kg



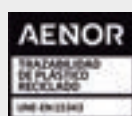
Ciclic® rLLDPE is 0.186 kg of CO<sub>2</sub> equivalents per kg



Ciclic® rLLDPE at 50% content



**45% CO<sub>2</sub> reduction**



ISO 14067

The e-commerce market continues to grow, and Ciclic® presents a sustainable plastic solution tailored to this industry. It enables a reduction in film thickness while maintaining excellent mechanical properties and optimal functionality in product usage.

**50% LLDPE virgin polymer can be successfully replaced by Ciclic®.**



# Courier Bags

## B&W Films

### Ciclic® – rLDPE

Replace up to 80% of virgin LDPE with Ciclic® high-quality LDPE PCR grade, ensuring excellent processability and a more sustainable product.

Ciclic® grades can adapt to a variety of aesthetic, physical, and mechanical properties.



#### KEY ADVANTAGES

- Enhanced Whiteness
- Optimal sealing properties
- Successful Virgin Replacement | No impairment of mechanical properties
- Smooth Production | Contains no bubble-bursting gel

#### SUSTAINABILITY



ISO 14067

#### Estimation of the Carbon Footprint Reduction

|   |   | Reference | New Solution |
|---|---|-----------|--------------|
| A | LLDPE                                       | 85%       |              |
|   | White-constant component                    | 15%       | 15%          |
|   | Ciclic® rLDPE                               |           | 85%          |
| B | LDPE  | 90%       |              |
|   | Granic® LLDPE - Ultrafine CaCO <sub>3</sub> |           | 20%          |
|   | White-constant component                    | 10%       | 10%          |
|   | Ciclic® rLDPE                               |           | 70%          |
| C | LLDPE                                       | 97%       |              |
|   | Black-constant component                    | 3%        | 3%           |
|   | Ciclic® rLDPE                               |           | 97%          |

Total CFP reduction with 25/50/25 as a structure: **92%**

| Layer | CFP Reduction for each layer (approximative values) |
|-------|---|
| A     | 93,1%   |
| B     | 90,9%   |
| C     | 93,1%   |

CO<sub>2</sub> emission for the virgin polymers extracted from GaBi 4 database according to GWP (Global Warming Potential). Ciclic® and Granic® values obtained by Life Cycle Assessment (LCA) carried out by TÜV Rheinland.



# Flexible Packaging Films

## RGranic®

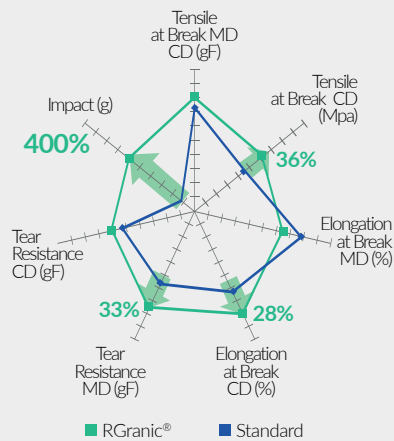
### PERFORMANCE

Thickness: 40 µm  
Layer Ratio: 25|50|25 (ABC)

|                               |
|-------------------------------|
| 96% rPE + 2% Green MB + 2% WA |
| 98% rPE + 2% WA               |
| 96% rPE + 2% Blue MB + 2 WA   |
| 2% desiccant additive         |

|                                     |
|-------------------------------------|
| 78% rPE + 2% Green MB + 20% Granic® |
| 60% rPE + 40% Granic®               |
| 78% rPE + 2% Blue MB + 20% Granic®  |
| Without desiccant additive          |

**Total RGranic®: 30%**



### KEY ADVANTAGES

- Strengthens rPE
- Moisture scavenger savings.
- High virgin PE replacement
- Improves bubble stability

### SUSTAINABILITY

- Lower Carbon Footprint
- RGranic® is Pas 2050 Carbon Footprint certified
- A complete LCA can be performed on RGranic®



RGranic® is an advanced mineral masterbatch, formulated with ultrafine CaCO<sub>3</sub> and our Ciclic® 100% recycled PE, delivering excellent performance.

It's especially recommended for flexible film applications that use PCR, such as consumer bags, agricultural films, industrial wraps, and construction.



# High-quality sustainable plastics for flexible packaging

Comprehensive packaging solutions.

## PERFORMANCE & SUSTAINABILITY

Our innovative materials combine the best of both worlds: an exceptional performance and a commitment to sustainability. .

**We work to ensure you don't have to sacrifice PERFORMANCE for improved SUSTAINABILITY.**

## CHALLENGES

We understand and solve flexible packaging challenges such as superior durability, **barrier properties**, hermetic sealing, good **printability** or **smooth processability**, offering design flexibility to enhance recyclability and reduce CO<sub>2</sub>.

## INNOVATION HUB

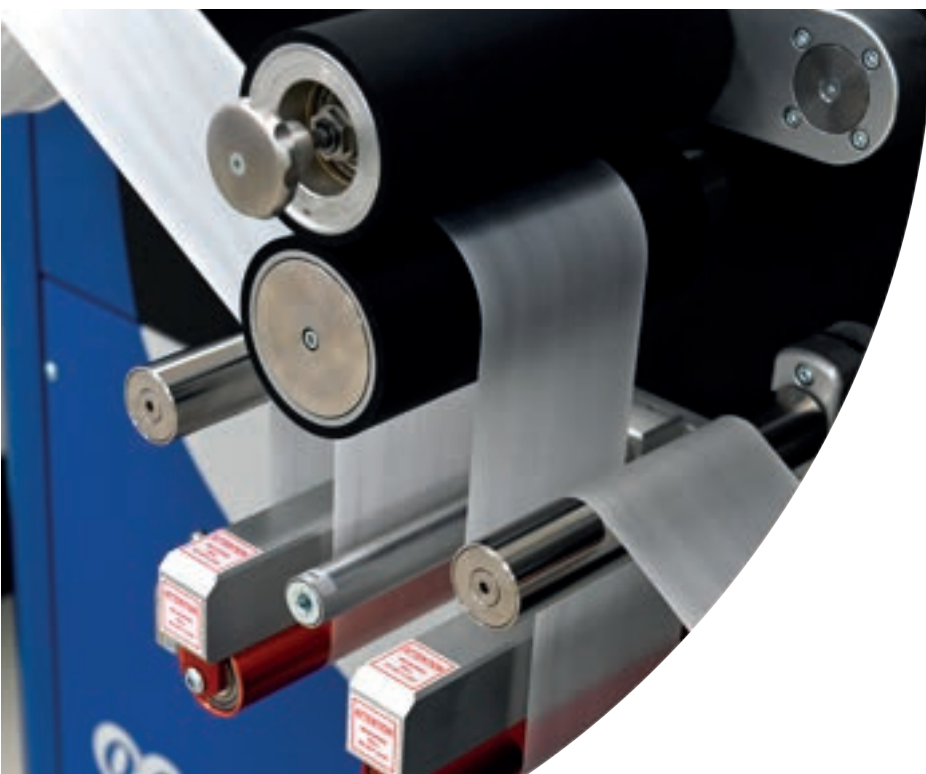
We can support **customised solutions at any stage of the development** process through our innovation hub capabilities. Testing and homologation services can be offered in-house or on the customer's premises.

## TRACEABILITY

Our plastics are sourced responsibly, incorporating recycled content and renewable resources that are traceable throughout our manufacturing process. This not only reduces our carbon footprint but also promotes a circular economy.

## COMPREHENSIVE SOLUTION

Join us in revolutionising packaging – where excellence meets sustainability.





The images of applications shown are for illustrative purposes only and may not precisely represent actual final applications or performance.

**Granic®** has the potential to reduce CO2 emissions by up to 50% at dosages around 70%. However, actual CO2 reductions may vary depending on the specific application, processing conditions, and product formulation used.

**CICLIC®** has the potential to reduce CO2 emissions by up to 90% in your product formulations. Actual emission reductions may vary based on the final application, product formulation, and specific usage conditions.

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Innovating  
our sustainable  
tomorrow

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