

Innovating our sustainable tomorrow

# **Rigid 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







Tarragona (Spain)



Production Capacity +500.000 MT/y



La Bisbal del Penedès, Castellet i La Gornal





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



# Your partner for sustainable solutions

# LEADING PRODUC-TION CAPACITY

- 425,000 mT/y compounds.
- 130,000 mT/y pre-consumer & post consumer.
- 20+ years of experience.
- Operational efficiency from strategic plant proximity.

## RELIABLE CONSISTENT SUPPLY

- Robust long-term material sources.
- Installed production capacity.
- Guaranteed Supply Security.
- Monitoring traceability.

# INNOVATION HUB

- Agile go-to-market solutions.
- Industrial Scale Pilot Plant & Lab technology.
- Co-creation space to facilitate collaborative innovation.
- 50+ Expert technical advisors.
- Customization Capabilities.

SUSTAINABILITY

- 11 years pioneers in Carbon Footprint Calculation
- 246,600\* tonnes of CO2 Emissions Saved to ou customers thanks to our solutions.
- Driving the Circular Economy.

\* Information based on 2023 annual calculation



- Aligned with ISO9001 & ISO14001 standards.
- Quality consistency through rigorous performance monitoring.
- State-of-the-art technology.
- Fully certified product portfolio.

# **Certifications** Committed to the highest standards















**ISO 9001** Quality Management system

**ISO 14001** Environmental Management system

**ISO 14067** Carbon Footprint

**PAS 2050** Carbon Footprint

**UNE – EN 15343** Recyled Content & Traceability

**Recyclass** Recycling Process for pre-consumer & post-consumer

**Biodegradability** Home & Industrial Compost, Soil Compost

**OCS – Operation Clean Sweep** Zero Pellet Loss

# GCR Minimizing the environmental impact



Prioritizing the purchase of raw materials in bulk to avoid overpackaging and reduce waste generation.



Ensuring balanced consumption of petrochemical compounds by using materials that reduce reliance on virgin polymers.



Striving for zero waste by recovering plastic materials already in circulation or from the packaging of received materials and converting them into raw materials for Ciclic products.



100% solar roof coverage at GCR's La Bisbal facilities, boosting clean energy from 520,000 kWh in 2022 to 1,579,000 kWh in 2024



Calculating the carbon footprint of our products in accordance with the PAS 2050 and ISO 14067 Carbon Footprint standard.



Making our packaging more sustainable by optimizing and redesigning it to offer a lower carbon footprint and increased usability.



# 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. 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 and ISO 14067 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



# 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 m2 co-creation space** in which to run collaborative projects and benefit from our technical expertise, capabilities, and cutting-edge technology. With a team of **+50 experts**, we also create value during **in-house sessions** by working closely alongside our clients.

#### **Expert Technical Advisors**



Over 50 highly knowledgeable technical advisors are ready to provide you with expert guidance and support at any stage of your project.

#### **Testing & Homologation**



Sustainable Materia 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 largescale production.

Together, we can turn your product challenges into Success Stories



# 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 Rigid Packaging

Understanding industry challenges





# **Rigid 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:

- Durability.
- Lightweight.
- Product Preservation.
- Secure Storage.
- Prolonged Shelf Life.
- Thin-walled.

- Aesthetic Appeal.
- Packaging Versatility.
- Sustainability.
- Eco-friendly solutions that use recyclable, biodegradable and/or natural origin materials.
- Reducing Carbon Footprint.



# Sustainable JJ Material Solutions JJ

# Rigid Packaging Challenges

## Performance Challenges

- High quality packaging.
- Effective barrier properties.
- Low energy consumption.
- Smooth processability.
- Dimensional stability.

## Recycling Challenges

- Consistent performance.
- Match the performance of prime POs.
- Seeking narrow specifications.
- ▶ SOIs under control.
- Material compatibilization.
- Reliable feedstock sources.

#### Sustainability Challenges

- Reuse: reused or repurposed.
- Recycle: monomaterials.
- ▼ Renewable Materials: recycled & biobased.
- EOL: designed for recyclability or biodegradation.



# Rigid 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<sup>®</sup> is a high-quality recycled and recyclable polyolefin product line.

### Mineral Masterbatches





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

## SERVICE LEVELS

- Technical Service
- Material Traceability
- 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
- Reducing Carbon Footprint and improving LCA

\*Subject to MRQ and LT agreements

# Sustainable Rigid Packaging Solutions





# **Caps & Closures**

# Ciclic<sup>®</sup> rpp

**Ciclic®** recycled polypropylene offers an eco-friendly solution derived from waste materials sourced from both pre-consumer and post-consumer. Specifically formulated for injection molding techniques, this grade is ideal for replacing virgin materials in caps & closures production.

#### **KEY ADVANTAGES**

- High Percentages Addition: Allows for significant incorporation rates in manufacturing processes.
- Stable Material: Ensures consistency and reliability in production.
- Good Demolding Behavior: Facilitates easy release from molds, enhancing efficiency.
- Good Dispersion in Mold: Uniform distribution within molds for consistent part quality.
- No Bad Smell: Provides a pleasant processing environment and end-product experience.
- Vorks with IML (In-Mold Labeling) and Adhesion

#### SUSTAINABILITY

**Composition Example:** Reference: 100% PP New formulation: 30% to 100% Ciclic rPP

# 27% to 90% CO2 reduction

- Lower Carbon Footprint.
- ▶ ISO 14067 Carbon Footprint certified.
- A complete LCA can be performed on Ciclic<sup>®</sup> products.



ISO 14067





# Hot food trays



#### **KEY ADVANTAGES**

- Enhances the HDT\* of injected parts.
- Improves dimensional stability (reduces warpage by 25%).
- Reduces cycle time.
- Maintains mechanical properties.
- Improves demoulding.
- Reduces stress whitening.
- Maintains weight and size.

\*HDT: Heat deflection temperature.

#### SUSTAINABILITY

#### **Composition Example:**

Reference: 100% PP | Talc New formulation: 60% PP + 40% Granic PP

# 28% CO<sub>2</sub> reduction



- Lower Carbon Footprint.
- Energy Efficiency.
- A complete LCA can be performed on Granic<sup>®</sup>.

## Granic<sup>®</sup> PP / Talc

**Granic**<sup>®</sup> PP – Talc is a functional mineral masterbatch, food contact approved, meeting all prevailing EU and FDA regulations.

In the food packaging industry, Granic<sup>®</sup> PP – Talc **enhances the HDT of injected parts, reduces warpage, and optimizes the injection molding process** without compromising performance.





# **Reusable Cups & Trays**

# Granic<sup>®</sup> PP | Ultra-fine - CaCO3

## Granic<sup>®</sup> PP | Ultrafine CaCO<sub>3</sub>

is a high-performance mineral masterbatch engineered with an extra-white, ultrafine calcium carbonate to deliver an optimal balance of strength and functionality. It ensures highperformance and enhanced processing efficiency.

#### **KEY PERFOMANCE BENEFTIS**

- Mechanical Properties: Significantly increases impact strength, bending performance, and stiffness for durable, reusable packaging.
- Dimensional Stability: Enhances heat deflection temperature (HDT) and reduces shrinkage, ensuring superior product reliability and precision.

#### KEY ADVANTAGES

- Enhanced Opacity: Achieves a superior finish while reducing the need for color masterbatch
- Improved Thickness Distribution: Ensures uniformity and minimizes the risk of warpage, providing a consistent final product.
- Thermal Efficiency: Higher thermal conductivity enhances heat transfer during sheet pre-heating and part cooling, boosting productivity.

#### SUSTAINABILITY

**Composition Example:** 83% Virgin PP + 17% Granic® PP

# 14% CO<sub>2</sub> reduction



- Lower Carbon Footprint.
- Energy Efficiency.
- ▼ Granic<sup>®</sup> is Pas 2050 Carbon Footprint certified.
- A complete LCA can be performed on Granic<sup>®.</sup>





# Compostable Coffee capsules

#### PERFORMANCE

Composition Example: PLA + 20% BioGranic

- Increases crystallinity by 15%.
- ▶ Improves Impact Resistance (Modulus) by 30%.



#### KEY ADVANTAGES

- Enhances output and process stability, ensuring a more uniform thickness distribution through improved plasticization.
- Significantly improves impact resistance and heat deflection temperature in PLA.
- Offers a cost-effective solution, enhancing the processing and performance of common biodegradable thermoplastics.
- Reduces brittleness, facilitating easier handling.

#### SUSTAINABILITY

**BioGranic®** is certified according to:

- OK Compost INDUSTRIAL
- ▶ OK Compost HOME.

Lower Carbon Footprint solution.



# **BIOGranic**®

BioGranic<sup>®</sup> is a mineral masterbatch with a unique mineral blend and biodegradable thermoplastic resin for compostable bioplastics in rigid applications. This **unique combination enhances the value of compostable bioplastics by improving performance,** reducing formulation costs, and optimizing the production process.





# Household Goods

# Granic<sup>®</sup> PP - Talc

**Granic®** PP – Talc is a reinforcing mineral masterbatch designed for the PP injection moulding market. It enhances the strength and stiffness of end products, offering an excellent alternative to talc compounds.

# PERFORMANCE

- ✓ 40% Granic<sup>®</sup> + 60% Virgin PP can replace a PP Compound with 30% Talc.
- Granic<sup>®</sup> makes the piece stiffer and tougher than Talc compound.
- Granic<sup>®</sup> PP Talc gives the finished part a more consistent look.

#### **KEY ADVANTAGES**

- Excellent Dimensional Stability.
- More Autonomy in the final formulation.
- Raw Material Savings.
- Delivers Improvement in Processing Process.
- Cycle time reduction (cooling time).

#### SUSTAINABILITY

**Composition Example:** 60% Virgin PP + 40% Granic<sup>®</sup> PP -Talc.

# 29% CO<sub>2</sub> reduction



- Lower Carbon Footprint.
- Energy Efficiency.
- Granic<sup>®</sup> is Pas 2050 Carbon Footprint certified.
- A complete LCA can be performed on Granic<sup>®</sup>.





# Bins, drums & Baskets

# Ciclic<sup>®</sup> rPP | Granic<sup>®</sup> LLDPE | Ultra-fine CaCO3

#### GRANIC<sup>®</sup> KEY ADVANTAGES

- Matte appearance.
- Reduced cycle time and energy consumption.
- Excellent dimensional stability.
- **Warpage** improvement.
- Prevents demoulding issues.

#### CICLIC<sup>®</sup> KEY ADVANTAGES

Standard polypropylenes **highly consistent** across batches ready for **long term supply commitments.** 

- ▶ Up to **100% replacement rate.**
- Grades with MFR ranging from 5 to 20 g/10 min (230° / 2.16 Kg).
- Good dispersion inmold.
- ▶ White, black and grey grades for injection.

#### SUSTAINABILITY

#### 28% CO<sub>2</sub> reduction



# At 40% virgin polymer replacement rate

#### SUSTAINABILITY

## 89% CO<sub>2</sub> reduction



# At 100% virgin polymer replacement rate

- A complete LCA can be performed on our products.
- ▶ ISO 14067 Carbon Footprint certified.

## Granic<sup>®</sup> LLDPE | Ultra-fine

**CaCO3** is a mineral masterbatch tailored for injection molding applications. It significantly enhances mechanical properties, boosting the strength and stiffness of finished products.

**Ciclic® rPP** offers a sustainable alternative to virgin polymers, maintaining high-quality standards while reducing environmental impact.

Together, they provide a sustainable and robust and durable solution ideal for rigid packaging applications.

Custom-made compounds available upon request.





# Bottles

# Granic<sup>®</sup> HDPE | Ultra-fine white CaCO3

**Granic**<sup>®</sup> HDPE | Ultra-fine CaCO? is a specialty mineral masterbatch designed for extrusion blow molding.

It enhances performance without compromising material integrity. It supports downgauging, providing production advantages while contributing to carbon footprint reduction.

#### PERFORMANCE

- Cycle Time Reduction: Up to 8%, boosting throughput.
- White Masterbatch Savings: Reduces the need for additional whitening agents, lowering costs

#### KEY ADVANTAGES

- Superior opacity and whiteness for improved aesthetics.
- Supports thinner walls while maintaining strength, reducing HDPE usage.
- Boosts productivity with up to 8% faster cycle times.
- Enhances dimensional stability and reduces stress whitening.
- Preserves mechanical properties even in thinner designs.

#### SUSTAINABILITY

Composition Example: 91% HDPE | 8% Granic<sup>®</sup> | 1% White MB

# 6% CO<sub>2</sub> reduction



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





# Bottles

#### **KEY ADVANTAGES**

- PCR Grades: Incorporates high-quality post-consumer recycled (PCR) materials for sustainable solutions.
- Smooth Production: Optimized for consistent processing and operational efficiency.
- Consistent Quality: Ensures homogeneity and reliability across production batches.
- Maintained Mechanical Properties: Provides strength and durability comparable to virgin HDPE. Perfect for homecare and industrial bottle production. Allows for significant substitution of virgin HDPE without quality loss.

#### SUSTAINABILITY

**Composition Example:** From 50% to 100% Ciclic rHDPE

## 45% to 90% CO2 reduction



#### **ISO 14067**

- Lower Carbon Footprint.
- ▶ ISO 14067 Carbon Footprint certified.
- A complete LCA can be performed on our products.
- Meets European Green Deal Targets: Designed to exceed the 30% recycled content requirement in packaging by 2030.

## Ciclic<sup>®</sup> rHDPE

**Granic**<sup>®</sup> rHDPE is a high-

performance recycled polymer designed for extrusion blow molding applications, offering sustainability without compromising quality or efficiency.

Ideal for producing homecare and industrial bottles, it supports the goals of the European Green Deal while delivering reliable performance.





# Transport Packaging

# Granic<sup>®</sup> PP | Talc

**Granic**<sup>®</sup> PP - talc is a mineral masterbatch designed for the transport packaging applications. It significantly enhances the strength and stiffness of end products, surpassing conventional additives for superior durability.

#### PERFORMANCE

- Compression strength: 3 stacked boxes = 2.6t
- ▶ Withstands 4 meters height at -30°C
- Maintains weight with excellent durability

#### KEY ADVANTAGES

- Excellent dimensional stability and warpage control
- Faster cycle times (3 seconds reduction)
- Improved demolding and reduced stress whitening
- Stronger with less material for weight-balanced designs

#### SUSTAINABILITY

#### Composition Example:

89% Virgin PP + 11% Granic® PP - |Talc

# 8% CO<sub>2</sub> reduction



- Lower Carbon Footprint.
- Energy Efficiency.
- ♥ Granic<sup>®</sup> is Pas 2050 Carbon Footprint certified.
- A complete LCA can be performed on Granic<sup>®</sup>.





# Foldable Boxes & Containers

# Ciclic<sup>®</sup> rPP | Granic<sup>®</sup> PP

#### KEY ADVANTAGES

- Ideal for thin-wall structures with improved strength at lower GSM
- Smooth surface for excellent printing results
- Consistent quality for reliable production
- Increased productivity with higher output

#### SUSTAINABILITY

#### Composition Example:

Reference: 100% PP New formulation: 30% Ciclic® rPP +25% Granic® PP +45% PP Copolymer

# 44% CO<sub>2</sub> reduction

- Lower Carbon Footprint.
- Energy Efficiency.
- Ciclic<sup>®</sup> is **ISO 14067** Carbon Footprint certified.
- ▼ Granic<sup>®</sup> is **PAS 2050** Carbon Footprint certified.
- A complete LCA can be performed.







Powerful synergy for corrugated and compact board applications with **Granic**<sup>®</sup> and **Ciclic**<sup>®</sup>.

**Granic**<sup>®</sup> reinforces hollow sheet structures, providing exceptional stiffness and toughness, while **Ciclic**<sup>®</sup> offers sustainable, highquality rPP known for its strength and reduced carbon footprint.





# Luxury Packaging Closures ABS replacement

# Ciclic<sup>®</sup> & Granic<sup>®</sup>

## Sustainable Alternatives to **ABS:** Ready to Transition?

As environmental concerns rise, ABS plastic is under scrutiny for its limited recyclability and carbon footprint.

GCR provides sustainable alternatives: custom PP-based compounds that deliver premium aesthetics while reducing carbon footprints and enhancing recyclability



#### **KEY ADVANTAGES**

#### Tailor-made RTU compounds for your needs

- ▶ Up to 50% polymer replacement with consistent quality
- Premium aesthetics after metallization with a heavy, thick feel for caps
- Maintains shrinkage for dimensional stability
- Options for virgin and/or recycled polymer bases

#### SUSTAINABILITY

- Lower Carbon Footprint, , with certified reductions
- All GCR products are Carbon Footprint certified.
- Life Cycle Assessment (LCA) available to quantify environmental impact.









#### **ISO 14067**



# Sustainable **Material Solutions**

# High-quality sustainable plastics for rigid 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.





## **GCR Headquarters** Sustainable Plastic Solutions

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# **Production Plants**

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**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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