Repsol Reciclex®
Towards a Circular Economy
Innovating for a sustainable world

We focus our innovation solely on our customers’ needs to create highly differentiated products compliant with even the strictest standards.

At Repsol, we believe in the circular economy. Thus, our Repsol Reciclex® range of polyolefins contains post-consumer recycled waste. These materials deliver outstanding technical performance certified by the UNE-EN 15343 standard and are adapted to the different application needs. Additionally, we offer ISCC Plus certified circular polyolefins from chemically recycled plastic waste that maintain the same properties and quality as the original raw materials.

Sustainability is essential to our forward-looking vision and the shared commitment undertaken by everyone at Repsol to become net zero emissions by 2050.

Join us!
Repsol. A global multi-energy company

With over 8 decades of experience

It is leading the energy transition with its ambition of achieving zero net emissions by 2050. Present throughout the energy value chain, the company employs 24,000 people worldwide and distributes its products in nearly 100 countries. Its customer-focused product and services portfolio meets all consumer needs of around 24 million customers, whether at home or on the move.

Repsol Campus, Corporate Headquarters in Madrid

LEED® Platinum certificate, awarded by the prestigious U.S. Green Building Council (USGBC), for new buildings construction
Repsol manufactures a wide variety of products, ranging from base petrochemicals to derivatives

**Base petrochemicals:** ethylene, propylene, butadiene, and benzene.

**Intermediate products:** styrene, propylene oxide, polyether polyols, and propylene glycols.

**Polyolefins:** polypropylene (PP) and PP compounds, both high and low density polyethylene (HDPE and LDPE), metallocene linear low density polyethylene (mLLDPE), ethylene vinyl acetate (EVA) and ethylene butyl acrylate (EBA) copolymers.

**Over 100 scientists and researchers working for you**
Including qualified personnel specialized on Product Stewardship.

Repsol’s commitment to R&D is evidence of the company’s aim to attain business excellence to meet future horizons.

**Added value**
Repsol’s Chemicals Division, with a high degree of integration, focuses its strategy on the constant generation of value through differentiated products and services.
Working for a more sustainable future

At Repsol, we believe in the circular economy, and we run specific projects that minimize the environmental impact of our materials. To this end, we are committed to making our industrial processes increasingly efficient and reducing the carbon footprint of our polymers.

We have a specialized circular economy department dedicated to recycling post-consumer materials to drive development of new materials offering solutions based on innovative polyolefins with recycled content.

We use recycled plastics in critical applications, creating new markets for plastic waste and driving circularity by giving that waste a new use. As a result, we offer a wide range of polyolefins with recycled content that deliver excellent engineering performance certified under UNE–EN 15343.

We have circular polyolefins obtained by incorporating pyrolysis oil, from chemically recycled plastic waste not suitable for mechanical recycling, together with virgin feedstock into our petrochemical process, reducing the consumption of non-renewable resources.

These circular polyolefins have the same properties and quality as virgin material and hold Food Contact Approval. We have obtained ISCC PLUS certification for circular and traceable polyolefins that use plastic waste as raw material. Moreover, our wide range of polyolefins is 100% recyclable.

Our ambition is to recycle by 2030 the equivalent of 20% of the polyolefins we produce to support, in conjunction with the other initiatives in Repsol’s circular economy strategy, the goal we announced in December 2019: to reach net zero emissions by 2050.

To contribute to the company's emissions neutrality goal, our chemicals business has launched its 3030 Plan, intended to cut our carbon intensity by 30% by 2030.

Advancing the circular economy and lowering carbon intensity in our chemicals business will contribute towards transforming Repsol’s industrial operations, as well as developing high-value-added raw materials, making it possible to manufacture an infinite number of products that improve human well-being, safety, and quality of life while enhancing the environment.
Repsol Reciclex® range

Advancing the sustainability circle

- Repsol Reciclex® helps our customers fully meet their sustainability targets.
- Two ranges tailored to support every customer project.
- Vocation to boost the Circular Economy.

Feedstock

Fossil-Based Resources

Chemical recycling

Mechanical recycling

Energy recovery

Organic recovery

Post use phase

Consumers

Manufacturing

Polymer production

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Repsol Reciclex® range

Advancing towards zero emissions

CHEMICAL RECYCLING

- 100% recycled plastic raw material.
- Completes the material life cycle.
- Full Repsol range across all applications.
- Same properties as standard range.
- Suitable for food, hygiene, and medical use.
- Low carbon footprint.
- ISCC Plus certificate.
- 100% recyclable.

MECHANICAL RECYCLING

- Over 20 grades with high proportions of recycled content.
- Applications in film, rigid packaging, auto, blow molding, compounding and others.
- Non-food applications.
- Low carbon footprint.
- UNE-15343 traceability certificate.
- Consistent quality and homogeneity.
- 100% recyclable.
Close to 30 grades of Repsol Reciclex®
We are embarking on partnerships to find solutions together.
We are committed to innovating to increase the circularity and efficient use of plastic materials.

- Incorporating mechanically and chemically recycled plastics.
- Giving plastic waste a new life to avoid it ending up in landfill.
- Reducing fossil raw material consumption.
- Reducing carbon footprint.
- Committing to technical requirements.
- Helping to meet voluntary commitments and legislative targets.

Flexible packaging
Injection
Fibers molding
Blow molding
Sheet and general extrusion
Compounds
# Flexible packaging

## LOPE

<table>
<thead>
<tr>
<th>Grade</th>
<th>MFI</th>
<th>Density</th>
<th>% Recycled</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>50RX2805F</td>
<td>0.6</td>
<td>925</td>
<td>50</td>
<td>Shrink film, medium duty industrial bags, films for general packaging.</td>
</tr>
<tr>
<td>70RX2805F</td>
<td>0.8</td>
<td>925</td>
<td>70</td>
<td>Shrink film, medium duty industrial bags, films for general packaging.</td>
</tr>
<tr>
<td>70RX2805H</td>
<td>0.8</td>
<td>925</td>
<td>70</td>
<td>High performance film quality. Shrink film, medium duty industrial bags and films for general packaging.</td>
</tr>
<tr>
<td>60RX3235G</td>
<td>2</td>
<td>923</td>
<td>60</td>
<td>Hygiene overwrap films and easy tear films.</td>
</tr>
<tr>
<td>85RX2310F</td>
<td>1</td>
<td>921</td>
<td>85</td>
<td>Packaging and medium-capacity bags.</td>
</tr>
<tr>
<td>85RX2310H</td>
<td>1</td>
<td>921</td>
<td>85</td>
<td>High performance film quality. Packaging and medium-capacity bags.</td>
</tr>
<tr>
<td>70RX2110G</td>
<td>1</td>
<td>923</td>
<td>70</td>
<td>Carrier bags, refuse bags with demanding properties.</td>
</tr>
<tr>
<td>72RX2110F</td>
<td>1</td>
<td>923</td>
<td>72</td>
<td>Medium duty industrial bags, films for general packaging.</td>
</tr>
<tr>
<td>55RX1830F</td>
<td>3</td>
<td>918</td>
<td>55</td>
<td>Stretch film.</td>
</tr>
<tr>
<td>10RXPE015</td>
<td>1</td>
<td>921</td>
<td>10</td>
<td>Acoustic insulation and protection foamed sheets.</td>
</tr>
</tbody>
</table>

### Sustainability
Materials that incorporate plastic post-consumer waste lower the carbon footprint.

### Less energy
High fluidity, excellent processability.

### Downgauging
Film thickness reduction.

### Blow molding

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Flexible packaging

LOPE

Monomaterial solutions that facilitate the recyclability of industrial film. They incorporate post-consumer recycled materials improving their sustainability and maintaining excellent properties.

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Carbon footprint saving

The results are based on Repsol Internal study, has not undergone ISO critical reviews

*Source: PlasticsEurope
Blow molding

<table>
<thead>
<tr>
<th>Grade</th>
<th>MFI (g/10 min)</th>
<th>Density (g/cm³)</th>
<th>Tensile strength at break (MPa)</th>
<th>ESCR (h)</th>
<th>Flexural modulus of elasticity (MPa)</th>
<th>Container capacity (l)</th>
<th>% Recycled</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>SORX5503</td>
<td>0.25*</td>
<td>955</td>
<td>20</td>
<td>100</td>
<td>1,100</td>
<td>&lt;20</td>
<td>50</td>
<td>Packaging of non-aggressive liquid detergents and chemicals.</td>
</tr>
<tr>
<td>SORX55050</td>
<td>10.5**</td>
<td>960</td>
<td>35</td>
<td>200</td>
<td>1,000</td>
<td>&lt;200</td>
<td>50</td>
<td>Blow molding of jerrycan containers and industrial packaging.</td>
</tr>
<tr>
<td>80RX55050</td>
<td>10.5**</td>
<td>960</td>
<td>25</td>
<td>200</td>
<td>950</td>
<td>&lt;200</td>
<td>80</td>
<td>Blow molding of jerrycan containers and industrial packaging.</td>
</tr>
</tbody>
</table>

* MFI (190 ºC / 2.16 kg)
** MFI (190 ºC / 21.6 kg)

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Carbon footprint saving

The results are based on Repsol internal study; has not undergone ISO critical reviews.

Stress cracking

* Test conditions Igepal 10%, 50 ºC (ESCR)
## Injection molding

**Polypropylene**

<table>
<thead>
<tr>
<th>Grade</th>
<th>MFI</th>
<th>Density</th>
<th>Color</th>
<th>Flexural modulus</th>
<th>Charpy impact strength</th>
<th>% Recycled</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>RXP28AG</td>
<td>20</td>
<td>905</td>
<td>RAL similar to 7038</td>
<td>1,250</td>
<td>75</td>
<td>20</td>
<td>Domestic and leisure furniture. Square boxes and round storage containers for consumer appliances. Industrial components: sports, leisure, automotive, storage organizers, packaging.</td>
</tr>
<tr>
<td>RXP59AN</td>
<td>30</td>
<td>910</td>
<td>Similar to RAL 7038 and 9016</td>
<td>1,450</td>
<td>4</td>
<td>50</td>
<td>Domestic and leisure furniture. Square boxes and round storage containers for consumer appliances. Thin-walled containers for non-food contact. Flowerpot, buckets, storage organizers, lids, waste containers and trays.</td>
</tr>
<tr>
<td>RXP60AT</td>
<td>40</td>
<td>940</td>
<td>Similar to RAL 7038</td>
<td>1,200</td>
<td>4.5</td>
<td>80</td>
<td>Domestic and leisure furniture. Square boxes and round storage containers for consumer appliances. Thin-walled containers for non-food contact. Flowerpot, buckets, storage organizers, waste containers and trays.</td>
</tr>
<tr>
<td>RXP48AH</td>
<td>16</td>
<td>905</td>
<td>Similar to RAL 7038</td>
<td>1,550</td>
<td>4</td>
<td>40</td>
<td>Domestic and leisure furniture. Square boxes and round storage containers for consumer appliances. Thin-walled containers for non-food contact. Flowerpot, buckets, storage organizers, lids, waste containers and trays.</td>
</tr>
<tr>
<td>RXP39AG</td>
<td>28</td>
<td>910</td>
<td>Similar to RAL 7038 and 7021</td>
<td>1,200</td>
<td>5.5</td>
<td>30</td>
<td>Domestic and leisure furniture. Square boxes and round storage containers for consumer appliances. Thin-walled containers for non-food contact. Flowerpot, buckets, storage organizers, lids, waste containers and trays.</td>
</tr>
</tbody>
</table>

### Carbon footprint saving

The results are based on Repsol Internal study; has not undergone ISO critical reviews.

<table>
<thead>
<tr>
<th>Reference polypropylene*</th>
<th>RXP60AT</th>
<th>RXP59AN</th>
<th>RXP48AH</th>
<th>RXP39AG</th>
<th>RXP28AG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon footprint (kg CO2/kg polymer)</td>
<td>1,63</td>
<td>1,14</td>
<td>1,19</td>
<td>1,24</td>
<td>1,27</td>
</tr>
</tbody>
</table>

*Source PlasticsEurope

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### Sheet and general extrusion

**Polypropylene**

<table>
<thead>
<tr>
<th>Grade</th>
<th>MFI</th>
<th>Flexural modulus</th>
<th>Charpy impact strength</th>
<th>% Recycled</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>RXP21BG</td>
<td>0.5</td>
<td>1,500</td>
<td>90</td>
<td>25</td>
<td>Sheet extrusion. Boards and profiles.</td>
</tr>
<tr>
<td>RXP52BG</td>
<td>15</td>
<td>1,400</td>
<td>45</td>
<td>50</td>
<td>Sheet extrusion. Boards and profiles.</td>
</tr>
<tr>
<td>RXP74BG</td>
<td>3</td>
<td>1,250</td>
<td>13</td>
<td>70</td>
<td>Sheet extrusion. Boards and profiles.</td>
</tr>
</tbody>
</table>

**Grades**

- **ISO 1133**
- **230 ºC / 2.16Kg**

**Applications**

- Sheet extrusion
- Boards and profiles

**Properties**

- **Flexural modulus (MPa)**
- **Charpy impact strength (kJ/m²)**
- **% Recycled post consumer material**

---

**Fibers**

**Polypropylene**

<table>
<thead>
<tr>
<th>Grade</th>
<th>MFI</th>
<th>Flexural modulus</th>
<th>Charpy impact strength</th>
<th>% Recycled</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>RXP13AA</td>
<td>2</td>
<td>1,600</td>
<td>5</td>
<td>30</td>
<td>Monofilament, strap and sheet extrusion.</td>
</tr>
</tbody>
</table>

**Grades**

- **ISO 1133**
- **230 ºC / 2.16Kg**

**Applications**

- Monofilament, strap and sheet extrusion

**Properties**

- **Flexural modulus (MPa)**
- **Charpy impact strength (kJ/m²)**
- **% Recycled post consumer material**

---

**New PP grade incorporates recycled material while ensuring consistency in quality and functionality.**

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### Carbon footprint saving

The results are based on Repsol Internal study; has not undergone ISO critical reviews.

- **Reference PP**
- **RXP74BG**
- **RXP52BG**
- **RXP21BG**

**Lightweight**

**Reusable**

**Recyclable**

**Recycled content**

**Injection molding**

**Compounds**

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<table>
<thead>
<tr>
<th>Grade</th>
<th>MFI</th>
<th>Flexural modulus</th>
<th>Charpy impact strength</th>
<th>% Recycled</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>05RXM440D</td>
<td>3</td>
<td>4,300</td>
<td>3</td>
<td>5</td>
<td>Under the bonnet parts subjected to severe mechanical stresses. Technical parts, in general.</td>
</tr>
<tr>
<td>10RXG370A</td>
<td>15</td>
<td>5,600</td>
<td>7</td>
<td>10</td>
<td>Technical parts, in general, electrical housings, power tools and washing machines cylinders.</td>
</tr>
<tr>
<td>50RXPP091</td>
<td>35</td>
<td>3,000</td>
<td>4</td>
<td>50</td>
<td>Under the bonnet parts subjected to severe mechanical stresses. Technical parts, in general.</td>
</tr>
<tr>
<td>RXP77AT</td>
<td>12</td>
<td>1,600</td>
<td>4.5</td>
<td>70</td>
<td>Interior trims and panels and technical parts, in general.</td>
</tr>
</tbody>
</table>

**Grade MFI**

ISO 1133 (g/10 min)

| 230 °C / 2.16Kg |

**Flexural modulus**

MPa

| Charpy impact strength |

23 °C, notched (J/m²)

| Application |

post consumer material

| Under the bonnet parts subjected to severe mechanical stresses. Technical parts, in general. |

---

**Carbon footprint saving**

The results are based on Repsol Internal study; has not undergone ISO critical reviews.

<table>
<thead>
<tr>
<th>Reference PP</th>
<th>RXP77AT</th>
<th>05RXM440D</th>
<th>50RXPP091</th>
<th>10RXG370A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon footprint (kg CO₂/kg polymer)</td>
<td>1.8</td>
<td>1.6</td>
<td>1.4</td>
<td>1.3</td>
</tr>
<tr>
<td>Carbon footprint saving (%)</td>
<td>60%</td>
<td>33%</td>
<td>27%</td>
<td>7%</td>
</tr>
</tbody>
</table>

*Source PlasticsEurope
Safety and quality are our priority

Excellence is intrinsic to Repsol’s values. It infuses our daily work and helps guide our decisions and actions, contributing to achieve the commitment made to our customers, stakeholders, employees, suppliers / partners, and society to build a better future.

Petrochemical complexes and logistics centers all have ISO 45001. We are food safety leaders. All our facilities are FSSC 22000 certified in recognition of our food safety risk management processes throughout the supply chain.

Technical Data Sheets and MSDS are available on: [www.repsol.com](http://www.repsol.com)

All petrochemical plants are compliant with the current ISO 9001 standards, for the quality of processes from manufacture to distribution, transport management and end product warehousing.

In February 2019 we obtained the ISCC PLUS certification in all our polyolefin production centers. We are one of the leading companies in the production of circular polyolefins that use recycled plastic waste as raw material, and this certification is an example of our commitment to promote the Circular Economy of our materials.

Certifications

<table>
<thead>
<tr>
<th>Petrochemical plants, plants and logistics</th>
<th>All industrial complex</th>
<th>Puertollano, Tarragona and Monzón plants</th>
<th>Puertollano and Monzón plants</th>
<th>Puertollano, Tarragona and Sines</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 45001</td>
<td>FSSC 22000</td>
<td>IATF 16949</td>
<td>UNE–EN 15343</td>
<td>ISO 50001 ISO 14001 ISO 14064</td>
</tr>
<tr>
<td></td>
<td>All petrochemical plants</td>
<td>ISO 9001 ISCC Plus</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Environment**

We offer sustainable solutions for our clients: 100% recyclable polyolefins.

We have set up and deployed an ambitious CO₂ program reduction that pursues a 40% reduction in SCOPE 1 & 2 emissions by 2030 (2017 as reference year) and zero emissions before 2050. Energy efficiency programs to reduce energy consumption and GHG emissions are one of the key elements of our strategy in the short term, followed by deep process electrification and CCUS. Biofeedstocks and renewable electricity will have a relevant role in this transition.

These programs pursue long-term targets made public to facilitate their progress by the stakeholders. In this sense, Repsol Química is committed to a reduction of 0.26 million tons per year of GHG emissions in the 2021-2025 Strategic Plan and a 1.3 million tons per year reduction until 2030 with a roadmap to be a net-zero company before 2050.

Regarding SCOPE 3 emissions, Repsol Química will contribute to the CO₂ emissions reduction at the plastics’ end of life with our circularity projects.

All petrochemical complexes have ISO 14001 certification for their environmental management and the reduction of the impact of their facilities, and ISO 14064 for the annual verification of greenhouse gas (GHG) emissions. In addition, the chemical area of our complexes in Tarragona (2015), Puertollano (2013), and Sines (2016) has implemented an Energy Management System according to the requirements indicated in the International Standard ISO 50001. This system is dedicated to developing and implementing our organization's energy policy and managing the energy aspects of our activities, products, or services. The objective is to increase and improve our energy efficiency based on systems implementation aimed at continuous energy performance improvement, thus contributing to more efficient and sustainable energy use.

Repsol Química has released on a yearly frequency the carbon footprint of all its product families since 2020, considering the “cradle to gate” scope based on ISO 14067.

Repsol’s purpose is to become a net-zero emissions company by 2050, and our 2021-2025 Strategic Plan enables us to continue successfully advancing our multi-energy commitment.
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