Pharmaceutical packaging and medical devices

Polypropylene, polyethylene and EVA copolymers
Differentiated solutions for the healthcare industry

Repsol offer
- High quality products
- Ready to be part of new projects
- Capable of developing tailor-made grades
- Excellent logistics service
- Technical service and development

Our drive
To fulfill our customers’ needs:
- Product reliability and traceability
- Compliance
- Long term commitment

Commitment
Dedicated storage facilities and quality management protocols to ensure the highest quality standards.

Guarantee
Certifying our products to meet European & US Pharmacopoeias [USP/EP].

Service
Aligning our Quality System with the Good Manufacturing Practices required by the Industry.
Repsol is committed to our customers’ global strategy putting our entire organization at their disposal to achieve a common goal: to create long-term relationships which enable us to rise to the common challenges our business presents.

Repsol

Over 8 decades of experience in the world of energy

One of the largest energy companies worldwide and one of the biggest private oil & gas companies.

Repsol Campus, Corporate Headquarters in Madrid

LEED® Platinum certificate, awarded by the prestigious US Green Building Council (USGBC), for new buildings construction.
Over 95 countries where we market our products

Added value
Repsol’s Chemicals Division, with a high degree of integration, focuses its strategy in the constant generation of value through differentiated products and services.

Over 1,500 references
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 specialised on Product Stewardship. Repsol’s commitment to R&D is an evidence of the company’s aim to attain business excellence to meet future horizons.
Our goal

To manufacture and sell polyolefins or pharmaceutical packaging and medical devices, offering the maximum quality, service, commitment and compliance worldwide, keeping the patients’ safety as our number one priority.

Growing from our strengths

Over 40 years of experience producing and selling polyolefins

Three integrated production facilities in the Iberian Peninsula. We have experience launching products with the maximum cleanliness and stringent manipulation procedures.

Food packaging: we supply regularly to the food packaging industry.

Qualified in pharmaceutical applications. Repsol’s propylene glycol USP/EP is qualified and approved for use as an excipient in pharmaceutical applications.
Repsol takes another step in differentiating its solutions and offers:

- A suitable range of polyolefins: high and low density polyethylene (HDPE, LDPE), ethylene vinyl acetate copolymers (EVA) and polypropylene (PP).

- An outstanding and differentiated level of service.

- Willingness to seek continuous improvement.

- We put your needs first, always. Our tailor-made solutions are proof of our commitment to your singular cause.

- Our industry is full of challenges awaiting inspired solutions. That’s where we come in.
# Polypropylene homopolymer

<table>
<thead>
<tr>
<th>Grade</th>
<th>MFI</th>
<th>Charpy impact strength notched</th>
<th>Melting point °C</th>
<th>Flexural modulus ISO 178 Mpa</th>
<th>Additives</th>
<th>Compliance</th>
<th>USP</th>
<th>Biocompatibility</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPP08G</td>
<td>8</td>
<td>4</td>
<td>164</td>
<td>1500</td>
<td></td>
<td>3.13 / 3.16</td>
<td>6611</td>
<td></td>
<td>Pharmaceutical packaging, closures and pouches.</td>
</tr>
<tr>
<td>HPP08N</td>
<td>8</td>
<td>3</td>
<td>164</td>
<td>1800</td>
<td>Nucleating agent</td>
<td>3.13 / 3.16</td>
<td>6611</td>
<td></td>
<td>Pharmaceutical packaging, caps and closures, labware, dispensers, holders, gaskets...</td>
</tr>
<tr>
<td>HPP09M</td>
<td>9</td>
<td>3</td>
<td>164</td>
<td>1500</td>
<td>Slip agent / Antiblock</td>
<td>In composition</td>
<td>In composition</td>
<td>USP 87 USP Cytotoxicity (Elution Test) USP 88 class VI ISO 10993-4, -5, -10, -11</td>
<td>Pharmaceutical packaging, caps and closures.</td>
</tr>
<tr>
<td>HPP12G</td>
<td>12</td>
<td>4</td>
<td>164</td>
<td>1550</td>
<td></td>
<td>3.13 / 3.16</td>
<td>6611</td>
<td></td>
<td>Injection molding, caps and closures and pharmaceutical packaging.</td>
</tr>
<tr>
<td>HPP25G</td>
<td>25</td>
<td>3</td>
<td>164</td>
<td>1600</td>
<td></td>
<td>3.13 / 3.16</td>
<td>6611</td>
<td></td>
<td>Syringe parts, caps and closures, pharmaceutical packaging, injection molding items.</td>
</tr>
<tr>
<td>HPP25G1</td>
<td>25</td>
<td>4</td>
<td>157</td>
<td>1250</td>
<td></td>
<td>3.13 / 3.16</td>
<td>6611</td>
<td></td>
<td>Improved impact resistance. Syringe parts, pharmaceutical packaging, caps and closures, injection molding items.</td>
</tr>
<tr>
<td>HPP40N</td>
<td>40</td>
<td>2.5</td>
<td>164</td>
<td>1700</td>
<td>Nucleating agent</td>
<td>3.13 / 3.16</td>
<td>6611</td>
<td></td>
<td>Thin wall injection molding, labware, dispensers.</td>
</tr>
<tr>
<td>NEW HPP55RMD</td>
<td>55</td>
<td>2.5</td>
<td>164</td>
<td>1800</td>
<td>Clarifying agent/ Radiation Resistant</td>
<td>-</td>
<td>In composition</td>
<td>USP 87 USP Cytotoxicity (Elution Test) USP 88 class VI ISO 10993-4, -5, -10, -11</td>
<td>Gamma ray and E-beam resistant high fluidity PP resin. Offers stiffness and excellent transparency.</td>
</tr>
<tr>
<td>NEW HPP55CMD</td>
<td>55</td>
<td>2.5</td>
<td>164</td>
<td>1800</td>
<td>Clarifying agent/ Antistatic</td>
<td>-</td>
<td>In composition</td>
<td>USP 87 USP Cytotoxicity (Elution Test) USP 88 class VI ISO 10993-4, -5, -10, -11</td>
<td>Injection molding medical applications and labware. Offers stiffness and high transparency.</td>
</tr>
</tbody>
</table>

Repsol Healthcare grades are DMF listed. For more detailed information on DMF listing, European Pharmacopoeia (Ph Eur.) and United States Pharmacopoeia (USP) please contact Repsol’s Technical Service & Development Department atd_poliolefinas@repsol.com

## Heterophasic polypropylene copolymer

<table>
<thead>
<tr>
<th>Grade</th>
<th>MFI</th>
<th>Charpy impact strength notched</th>
<th>Melting point °C</th>
<th>Flexural modulus ISO 178 Mpa</th>
<th>Additives</th>
<th>Compliance</th>
<th>USP</th>
<th>Biocompatibility</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPB15NMD</td>
<td>15</td>
<td>6</td>
<td>164</td>
<td>1600</td>
<td>Nucleating Agent</td>
<td>In composition</td>
<td>USP 87 USP Cytotoxicity (Elution Test) USP 88 class VI ISO 10993-4, -5, -10, -11</td>
<td>Injection molding medical applications. Offers excellent impact/stiffness balance.</td>
<td></td>
</tr>
</tbody>
</table>

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All our Polypropylene grades are phthalate free
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Over 40 years of experience producing and selling polyolefins with a well-built prestige in Europe
# Polypropylene random copolymer

<table>
<thead>
<tr>
<th>Grade</th>
<th>Properties</th>
<th>Additives</th>
<th>Compliance</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MFI</td>
<td>Charpy impact strength</td>
<td>Melting point</td>
<td>Flexural modulus</td>
</tr>
<tr>
<td></td>
<td>ISO 1133 g/10'</td>
<td>ISO 179 kJ/m²</td>
<td>°C</td>
<td>ISO 178 Mpa</td>
</tr>
<tr>
<td>HPR02CMD</td>
<td>16</td>
<td>&gt;9</td>
<td>143</td>
<td>800</td>
</tr>
<tr>
<td>HPR02W</td>
<td>16</td>
<td>&gt;9</td>
<td>143</td>
<td>800</td>
</tr>
<tr>
<td>HPR09G</td>
<td>9</td>
<td>8</td>
<td>145</td>
<td>950</td>
</tr>
<tr>
<td>HPR09M</td>
<td>9</td>
<td>8</td>
<td>145</td>
<td>950</td>
</tr>
<tr>
<td>HPR35CMD</td>
<td>38</td>
<td>6</td>
<td>149</td>
<td>1050</td>
</tr>
<tr>
<td>HPR35PMD</td>
<td>38</td>
<td>6</td>
<td>149</td>
<td>1050</td>
</tr>
<tr>
<td>HPR35RMD</td>
<td>38</td>
<td>6</td>
<td>149</td>
<td>1050</td>
</tr>
<tr>
<td>HPR50CMD</td>
<td>50</td>
<td>5</td>
<td>149</td>
<td>1150</td>
</tr>
<tr>
<td>HPR75CMD</td>
<td>75</td>
<td>6</td>
<td>149</td>
<td>1050</td>
</tr>
</tbody>
</table>

Repsol Healthcare grades are DMF listed. For more detailed information on DMF listing, European Pharmacopoeia (Ph Eur.) and United States Pharmacopoeia (USP) please contact Repsol’s Technical Service & Development Department atd_poliolefinas@repsol.com

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**Properties**

- **MFI**
  - ISO 1133 g/10' 230°C 2.16 kg
- **Charpy impact strength**
  - ISO 179 kJ/m²
- **Melting point**
  - °C
- **Flexural modulus**
  - ISO 178 Mpa

**Additives**

- **HPR02CMD**: 16 >9 143 800 Clarifying agent
- **HPR02W**: 16 >9 143 800 - 3.1.3 / 3.1.6 6611.
- **HPR09G**: 9 8 145 950 - 3.1.3 / 3.1.6 6611.
- **HPR09M**: 9 8 145 950 Slip agent / Antiblock -
- **HPR35CMD**: 38 6 149 1050 Clarifying agent / Antistatic -
- **HPR35PMD**: 38 6 149 1050 Clarifying agent / Antistatic / Slip agent -
- **HPR35RMD**: 38 6 149 1050 Clarifying agent / Radiation resistance -
- **HPR50CMD**: 50 5 149 1150 Clarifying agent / Antistatic -
- **HPR75CMD**: 75 6 149 1050 Clarifying agent / Antistatic -

**Compliance**

- **EurPh**: In composition
- **USP**: In composition

**Biocompatibility**

- **USP 87 USP Cytotoxicity (Elution Test)**
- **USP 88 class VI ISO 10993-4, -5, -10, -11**

**Applications**

- **Medical packaging, film and pouches, vials.**
- **Large volume parenteral blow fill seal bottles apt for autoclave sterilization at 121°C.**
- **Barefoot grade. Medical packaging, films and pouches.**
- **Injection moulding items.**
- **Caps and closures, syringe parts, medical device components.**
- **Caps and closures, syringe parts, medical device components.**
- **Caps and closures, syringe parts, tubes, labware. Gamma and E-beam rad.**
- **Caps and closures, syringe parts, medical device components.**
- **Caps and closures, syringe parts, medical device components.**
- **Caps and closures, syringe parts, medical device components.**
- **Small syringes, thin wall parts.**

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## Low density polyethylene

<table>
<thead>
<tr>
<th>Grade</th>
<th>MFI</th>
<th>Properties</th>
<th>Additives</th>
<th>Compliance</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLD01S</td>
<td>0.3</td>
<td>Density ISO 1183 kg/m³</td>
<td>Melting point 190ºC, 2.16 kg</td>
<td>No additives</td>
<td>USP 87 USP Cytotoxicity (Elution Test) USP 88 class VI ISO 10993-4, -5, -10, -11 Excellent flexibility for small volume parenteral bottles and ampoules.</td>
</tr>
<tr>
<td>HLD01S1</td>
<td>0.55</td>
<td>922</td>
<td>110</td>
<td>No additives</td>
<td>3.13 / 3.14</td>
</tr>
<tr>
<td>HLD02S</td>
<td>2</td>
<td>928</td>
<td>117</td>
<td>No additives</td>
<td>3.13 / 3.14</td>
</tr>
<tr>
<td>HLD02G</td>
<td>2</td>
<td>Antioxidants / Antiblock / Slip agent</td>
<td>920</td>
<td>110</td>
<td>USP 87 USP Cytotoxicity (Elution Test) USP 88 class VI ISO 10993-4, -5, -10, -11 Soft LDPE containing slip and antiblock. For pharmaceutical packaging, caps and closures and other medical devices.</td>
</tr>
<tr>
<td>HLD08S</td>
<td>8</td>
<td>920</td>
<td>109</td>
<td>No additives</td>
<td>3.13 / 3.14</td>
</tr>
<tr>
<td>HLD20S</td>
<td>22</td>
<td>923</td>
<td>104</td>
<td>No additives</td>
<td>3.13 / 3.14</td>
</tr>
</tbody>
</table>

Repso Healthcare grades are DMF listed. For more detailed information on DMF listing, European Pharmacopoeia (Ph. Eur.) and United States Pharmacopoeia (USP) please contact Repsol’s Technical Service & Development Department at d_poliolefinas@repsol.com.
## High density polyethylene

<table>
<thead>
<tr>
<th>Grade</th>
<th>MFI ISO 1133 g/10' 190ºC</th>
<th>MFI ISO 1133 g/10' 190ºC 5 kg</th>
<th>MFI ISO 1133 g/10' 190ºC 21.6 kg</th>
<th>Density ISO 1183 kg/m³</th>
<th>Melting point °C</th>
<th>Additives</th>
<th>Compliance</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHD50G</td>
<td>0.25</td>
<td>-</td>
<td>20</td>
<td>950</td>
<td>135</td>
<td>Antioxidants 3.1.3 / 3.1.5</td>
<td>USP 87 USP Cytotoxicity (Elution Test) USP 88 class VI ISO 10993-4, -5, -10, -11</td>
<td>Typical extrusion blow moulding grade for pill jars, offering increased density and barrier properties. Typically also converted in IBM process.</td>
</tr>
<tr>
<td>HHD55G</td>
<td>0.25</td>
<td>-</td>
<td>25</td>
<td>955</td>
<td>135</td>
<td>Antioxidants 3.1.3 / 3.1.5</td>
<td>USP 87 USP Cytotoxicity (Elution Test) USP 88 class VI ISO 10993-4, -5, -10, -11</td>
<td>Blow molding HDPE grade presenting stiffness and excellent stress cracking resistance. Grade used for pill jars and containers for pharmaceutical packaging.</td>
</tr>
<tr>
<td>HHD62G</td>
<td>0.3</td>
<td>-</td>
<td>30</td>
<td>962</td>
<td>137</td>
<td>Antioxidants 3.1.3 / 3.1.5</td>
<td>USP 87 USP Cytotoxicity (Elution Test) USP 88 class VI ISO 10993-4, -5, -10, -11</td>
<td>Packaging, diagnostic and tubes, blow moulding bottles.</td>
</tr>
<tr>
<td>HHD55G1</td>
<td>-</td>
<td>24</td>
<td>5.5</td>
<td>955</td>
<td>136</td>
<td>Antioxidants 3.1.3 / 3.1.5</td>
<td>USP 87 USP Cytotoxicity (Elution Test) USP 88 class VI ISO 10993-4, -5, -10, -11</td>
<td>Extrusion blow molding HDPE grade for pharmaceutical packaging including BFS processes. Good process stability.</td>
</tr>
</tbody>
</table>

Repsol Healthcare grades are DMF listed. For more detailed information on DMF listing, European Pharmacopoeia (Ph Eur.) and United States Pharmacopoeia (USP) please contact Repsol’s Technical Service & Development Department: atd_polyolefines@repsol.com

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**A helping hand on technical matters to obtain the best performance**
**EVA copolymer**

<table>
<thead>
<tr>
<th>Grade</th>
<th>MFI ISO 1133 g/10' 190°C 2.16 kg</th>
<th>VA content %</th>
<th>Additives</th>
<th>Compliance</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVA08G</td>
<td>2</td>
<td>75</td>
<td>Antioxidants</td>
<td>USP 87 USP Cytotoxicity (Elution Test)</td>
<td>It is used for transdermal patches but can also be used for small blow molding, injection molding or tubing.</td>
</tr>
<tr>
<td>HVA18G1</td>
<td>0.7</td>
<td>18</td>
<td>Antioxidants</td>
<td>Testing in progress</td>
<td>Extrusion of medical film and production of medical bags, seals.</td>
</tr>
<tr>
<td>HVA18G</td>
<td>2</td>
<td>18</td>
<td>Antioxidants</td>
<td>USP 87 USP Cytotoxicity (Elution Test)</td>
<td>Medical film and bags, tubing, seals and closures.</td>
</tr>
<tr>
<td>HVA28G1</td>
<td>3.5</td>
<td>27.5</td>
<td>Antioxidants</td>
<td>USP 87 USP Cytotoxicity (Elution Test)</td>
<td>Medical film.</td>
</tr>
<tr>
<td>HVA28G2</td>
<td>7</td>
<td>28</td>
<td>Antioxidants</td>
<td>USP 87 USP Cytotoxicity (Elution Test)</td>
<td>Injection moulding medical devices.</td>
</tr>
</tbody>
</table>

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Qualified in more pharmaceutical applications: Repsol’s propylene glycol USP/EP is qualified and approved for use as an excipient in pharmaceutical applications.
MEDICAL POLICY DISCLAIMERS

The use of this product in any Medical Device must comply with the following criteria:

- **Class I Medical Devices** [European Union and/or U.S. FDA]: the product may only be used for this purpose with prior notification to REPSOL QUIMICA, S.A. of each specific final application.

- **Class II Medical Devices** [European Union and/or U.S. FDA]: the product may only be used for this purpose with REPSOL QUIMICA, S.A.’s prior written approval.

This product may not be used for implantable devices and for Class III Medical Devices [European Union and/or U.S. FDA].

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REPSOL QUÍMICA, S.A. accepts no liability from the use of its materials in conjunction with other materials.
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.

**Building trust through safety and transparency**

**Safety is our priority**

Petrochemical complexes, packaging facilities and logistics centres all have OHSAS 18001:2007 (Occupational Health and Safety Assessment Series) certification for their rigorous safety measures.

**Quality**

All petrochemical plants are compliant with the current ISO 9001:2015 standards, for the quality of processes from manufacture to distribution, transport management and end product warehousing.

Technical Data Sheets and MSDS are available on: www.repsol.com
Environment

We set up and deploy ambitious energy efficiency programmes to reduce energy consumption and GHG emissions as one of the key elements of our strategy. These programmes pursue long term targets which have been made public in order to facilitate their progress by the stakeholders. In this sense, Repsol Química has attained a final reduction of 0.56 million tonnes of GHG emissions at the end of the 2006-2013 period. Repsol is currently working on a new target covering the period 2014-2020, that involves an additional reduction of 0.42 million tonnes of CO₂.

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.

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, as well as manage 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 performances improvement and thus contribute to a more efficient and sustainable use of energy.

Repsol reinforced its commitment with sustainability by signing the “Paris Pledge for Action” document. An historical agreement in which both developed countries and less developed countries and companies engaged to contribute towards a low CO₂ emission economy.

Puertollano, Tarragona and Sines

ISO 50001 / ISO 14001 / ISO 14064

December 2020
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