



Pipes

Polyethylene / Polypropylene



Repsol. A global multi-energy company

 **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 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.

 **Over 90 countries** where we market our products

Repsol has a diverse workforce of over 25,000 employees, marketing products in over 90 countries and reaching 10 million customers. Repsol's highly integrated Chemical Division focuses its strategy on the continuous generation of value through differentiated products and services.

Repsol Campus, Corporate Headquarters in Madrid

LEED® Platinum certificate, awarded by the prestigious U.S. Green Building Council (USGBC), for new buildings construction



Chemicals



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.



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 an evidence of the company's aim to attain business excellence to meet future horizons.

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.

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 are therefore apt for the cable industry.

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.



Committed
to Net Zero
Emissions

Over **60%** renewable energy demand
will rise by around 50% by 2030

Estimates show that with current population growth and poor water management practices, the world will face a 40% water shortage by 2030. In terms of development, water scarcity is a top global risk. The world will need to meet the development challenges of the 21st century and improve how water resources are managed.

Chemicals, and specialty plastics, are key to developing modern pipes that will ensure access to reliable water and sanitation services in tomorrow's demanding infrastructure environments.

Over **30** years of experience
in Technical Service and Development

Repsol develops a wide range of products specifically for pipe applications. Our Technology Lab, beacon of innovation, puts progress first; this is the place where products come to life and are meticulously perfected, to the benefit of our clients. The result: a competitive advantage for both Repsol and its client base, driven by excellence in service and development.

Offering solutions in low, medium and high density polyethylene, as well as polypropylene



Over **28** grades for pipes

Our versatility allows us to produce one of the most extensive ranges of polyolefins on the market, for a wide range of segments like:



Household



Agriculture



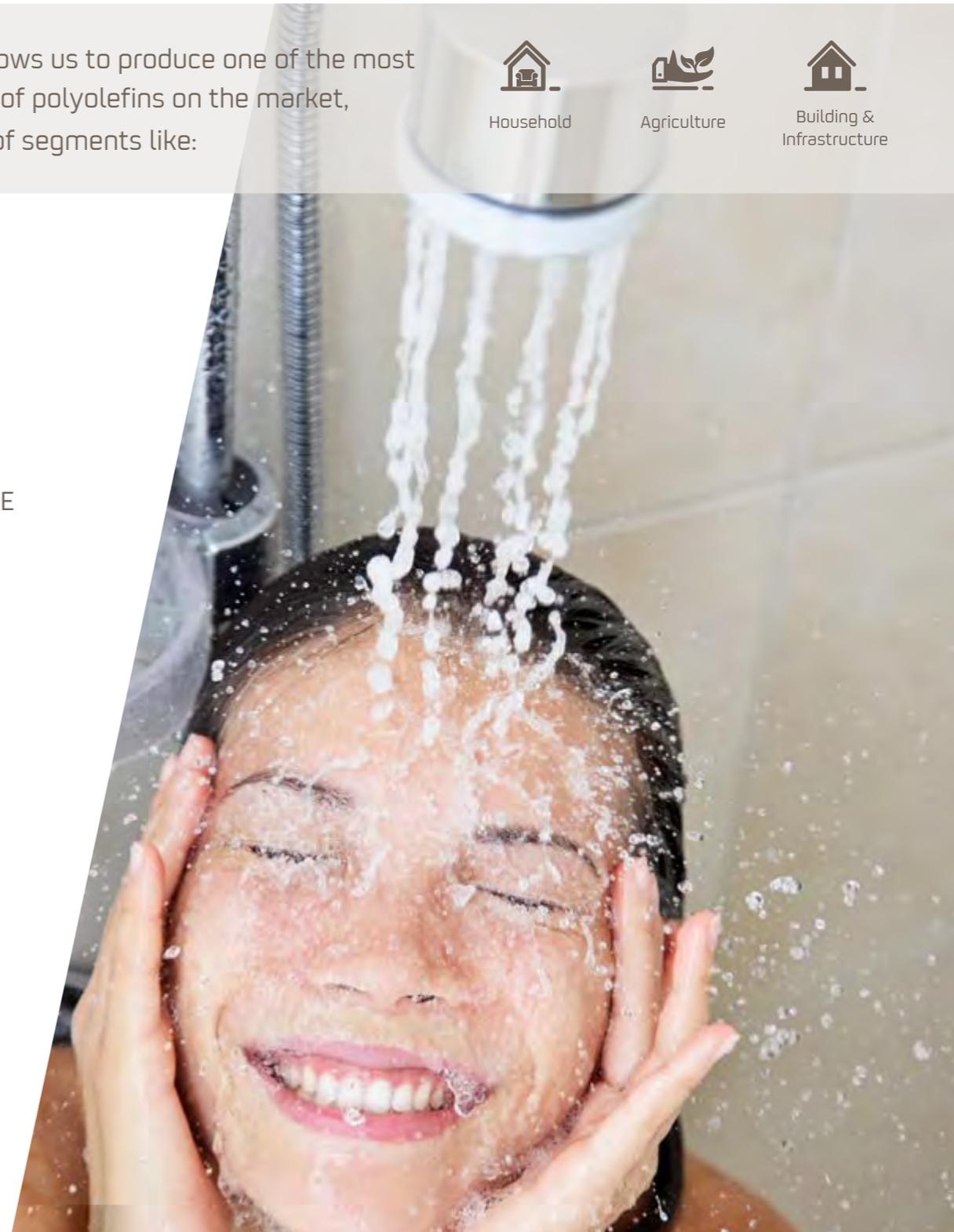
Building &
Infrastructure

Water, gas and irrigation pressure pipes

These products are approved by renowned European organizations for a wide array of pressure pipe applications: PE40 in LDPE, PE80 in MDPE, bimodal HDPE and PE100.

Sewerage, drainage and cable protection pipes

Extensive portfolio of polyethylene and polypropylene products with varying degrees of stiffness and processability in corrugated and plain pipes. Available in all diameter ranges, depending on our customers' requirements and the final application of the pipe.



Polyethylene and polypropylene for pipes

Polyethylene and polypropylene pipes guarantee present and future needs by using natural resources to protect the environment

Different production technologies to offer reliable, quality solutions to enhance your business:

- **Respect for the environment**

The properties of plastic pipes, such as: flexibility, fusion joints and minimum number of accessories; allow for leakage reduction in the pipeline network, preventing water losses and spills of dangerous liquids.

- **Excellent mechanical properties**

Autoclave and tubular for materials such as LDPE, EVA, EBA; slurry loop and bimodal for HDPE; and slurry and spheripol for PP.

- **100% recyclable of high quality**

The material obtained from recycling can be used to manufacture new products.

Polyethylene for transport under pressure of water, gas and irrigation

Grade	Colour	MFI			Density ISO 1183 kg/m ³	Type of polymer	MRS Qualification ISO TR9080	Recommended use
		ISO 1133 (190°C) g/10'	2.16 kg	5 kg				
T40N	Black	0.25	-	-	932	LDPE	PE40	Water transport
2202BS	Blue	0.3	-	-	932	LDPE	-	Water pressure pipe marking lines (recommended for T40N)
3802	Natural	0.18	0.85	19	938	MDPE	-	Non-certified pressure pipe
3802N	Black	0.18	0.85	18	948	MDPE	-	Drip tape/irrigation tapes
T80N	Black	0.1	0,52	13	960	HDPE Bimodal	PE80	Non-certified pressure pipe
T100NLS	Black	-	0,27	7	962	HDPE Bimodal	PE100	Water and gas transport
51100BS	Blue	-	0,27	-	955	HDPE Bimodal	-	Identification stripes for water (recommended for T100NLS)
51100YS	Yellow	-	0,27	-	955	HDPE Bimodal	-	Identification stripes for gas (recommended for T100NLS)
51100	Natural	-	0,27	-	955	HDPE Bimodal	-	Non-certified pressure pipe

Repsol adds value to its customers' businesses by reinforcing their trade opportunities with IIP, LNE and Din-Certco certifications in water and gas pressure piping



> Polyethylene

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Polyethylene for sewerage, drainage and cable protection

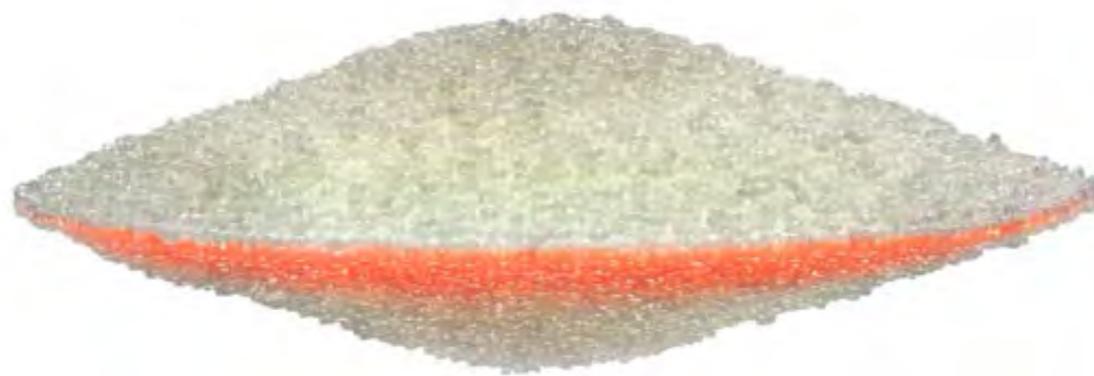
Grade	Colour	MFI			Density ISO 1183 kg/m ³	Flexural modulus ISO 178 MPa	Type of polymer	Recommended use
		ISO 1133 (230°C) 2.16 kg	g/10' 5kg	21.6 kg				
PE033	Natural	0.30	-	-	921	-	LDPE	Internal layer of corrugated pipe
2202F	Natural	0.25	-	-	921	-	LDPE	Internal layer of corrugated pipe
PE034	Natural	0.30	-	-	922	-	LDPE	Internal layer of corrugated pipe
2303F	Natural	0.30	-	-	922	-	LDPE	Internal layer of corrugated pipe
TR135	Natural	0.12	-	12	938	-	MDPE	Internal layer of corrugated pipe
3802	Natural	0.18	0.85	19	938	700	MDPE	Plain pipe for cable protection
5503	Natural	0.25	1.1	25	955	1100	HDPE	Corrugated pipe with good balance of processability / flexibility
5606T	Natural	0.60	2	40	956	1400	HDPE	Corrugated pipe with excellent processability
CAB4910	Natural	0.90	-	-	949	1100	HDPE Bimodal	Corrugated pipe with excellent processability
5803	Natural	0.25	1.1	26	958	1400	HDPE Bimodal	Corrugated pipe with high rigidity
51100	Natural		0.27		958	1100	HDPE Bimodal	Corrugated pipe with very high ESCR

The jointing connections of polyethylene and polypropylene pipes ensure watertightness throughout. This prevents losses, leakages, infiltrations and exfiltrations in the network

Polyethylene < > Polypropylene

Polypropylene for hot and cold water transport under pressure

Grade	Colour	MFI		Flexural modulus	Type of PP	MRS Qualification	Recommended use
		ISO 1133 (190°C) g/10'	g/10				
				ISO 178 MPa		ISO TR9080	
PR210G4E	Natural	0.3	1.2	900	Random	PPR80	Pressure pipes for end user free additivation
PR210X6E	Natural	0.3	1.2	900	Random	PPR80	Pressure pipes with high thermal stabilization
PG331AS000	Natural	-	2.0	5700	Compound	-	30% glass fiber compound for high stability pipes



Polyethylene and polypropylene pipes do not corrode, and require no internal or external coating

Polypropylene for sewerage, drainage and cable protection

Grade	Colour	MFI		Flexural modulus	Type of PP	Recommended use
		ISO 1133 (190°C) g/10'	g/10			
				ISO 178 MPa		
PP015G3E	Natural	0.8	-	1650	Homopolymer	Plain pipe for general purposes
PP020G3E	Natural	0.9	-	1600	Homopolymer	Plain pipe for general purposes
PB110H2E	Natural	0.3	1.2	1500	Block copolymer	High rigidity pipes for sewerage
PB120G1F	Natural	0.9	-	1200	Block copolymer	General non-pressure pipes
PB130G1M	Natural	1.3	-	1300	Block copolymer	Low diameter monolayer corrugated pipe
PB131N5E	Natural	1.3	-	1300	Block copolymer	High impact resistance corrugated pipe for cable application
PB140G2M	Natural	3.5	-	1100	Block copolymer	High processability corrugated pipe



Polyethylene <

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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.

Safety is our priority

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

Petrochemical plants, plants and logistics	ISO 45001
All industrial complex	FSSC 22000
Puertollano, Tarragona, and Monzón plants	IATF 16949
Puertollano and Monzón plants	UNE-EN 15343

European directives:

- Products recommended for use in pipes supplying drinking water comply with European standard EN 12201-1:2008.
- Products recommended for use in gas pipes comply with European standard EN 1555-1:2011.

Additionally, Repsol products have the following certifications for pressure pipes active:

				
Water	T40N, T100NLS	T100NLS	T100NLS	T100NLS
Gaseous fuels	T100NLS			

At Repsol, we work towards a common goal: to be a global business aimed at ensuring people's well-being and that always stays one step ahead in building a better future through the development of smart energy solutions



Quality

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

All petrochemical plants **ISO 9001**

Environment

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.

Puertollano, Tarragona and Sines **ISO 50001 / ISO 14001 / ISO 14064**

Chemicals Customer Care

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Collaboration

Results orientation

Inspiring Leadership

Intrapreneurship

Accountability

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