



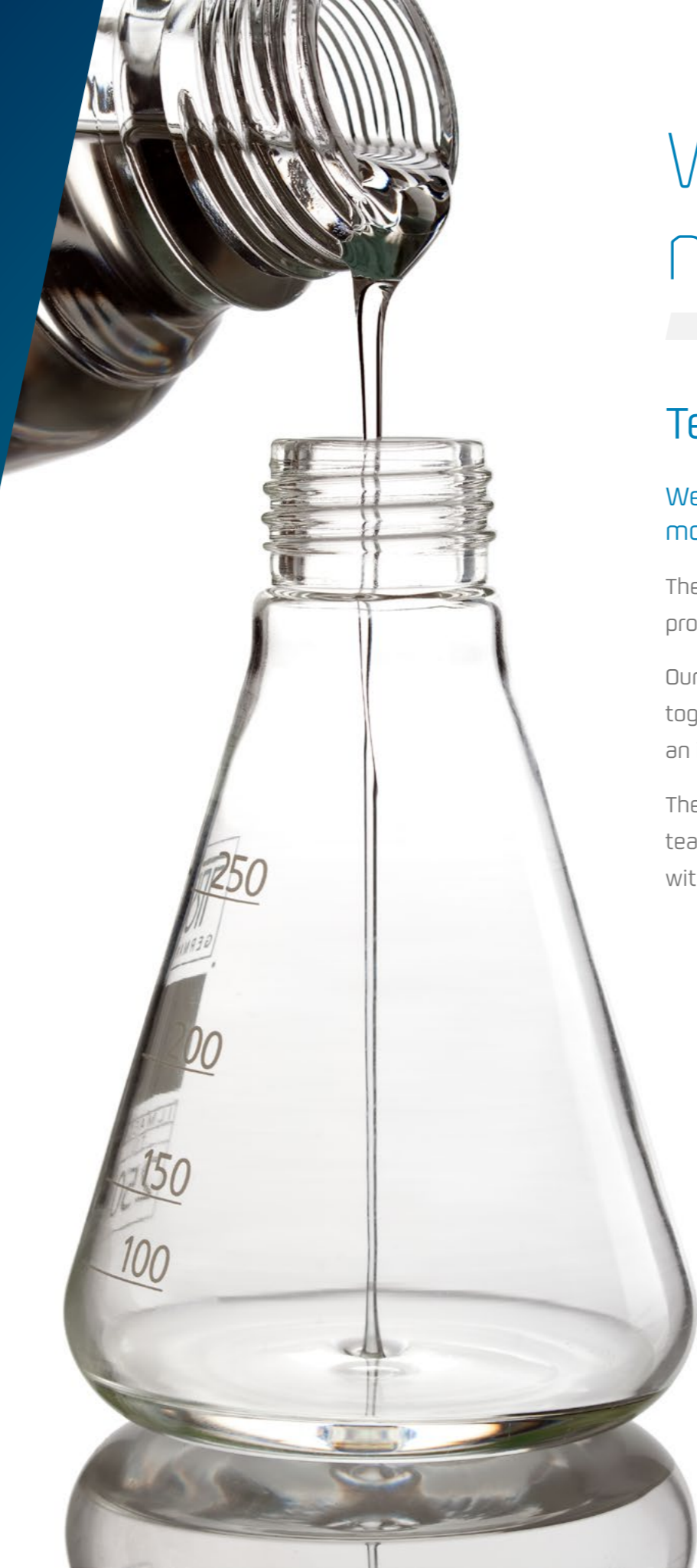
Polyether polyols

Alcupol[®]

Flexible slabstock & moulding;
rigid foams and CASE applications



Polyether polyols



Where innovation meets excellence

Technological strength

We use our technology in the production of propylene oxide/styrene monomer (POSM) and new polyol developments.

The implementation of our technical solutions and our long experience in the polyol production since the '70s, allows us to offer outstanding products and services.

Our Technology Centre is a recognized innovation model in Europe. This leading site together with our continuous industrial developments have enabled us to become an international reference in the POSM sector.

These infrastructures, together with our highly qualified technical and development teams, always equipped with the latest technologies, guarantee our commitment with product innovation.

Polyether polyols



Our commitment with you

We work hand in hand at our customers' sites to optimize product performance. We take into consideration the different standards and the specific requirements of each application.

Satisfaction

A polyether polyol portfolio, developed using proprietary technology, which offers a wide range of alternatives to meet the specific needs of its clients.

True partners

Where others only see a client we see a partner to keep improving. This is how our technical service turns into a competitive advantage to help you offer better solutions.

Expert team

Repsol has a highly specialised sales team present throughout Europe. Repsol gives a personalised customer care to every client in their own language and with a world leading technology in customer care.

Repsol

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 US Green Building Council
(USGBC), for new buildings construction

Chemicals

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

We focus all our resources to reach our most important goal: to develop innovative solutions. Our Technology Centre in sync with our steady plant improvements and our development of Industrial Sites, has steered **Repsol's leadership in POSM** production. An international reference to offer you always the latest solutions.

Chemicals



Understanding your needs

At Repsol we are committed with the development of new products for our clients. We are in constant search of **innovative solutions to meet all your needs**. Our goal is to develop cutting-edge products to offer **reliable and quality solutions** to enhance your business.

Due to this vision Repsol displays one of the widest ranges of polyether polyols in the market.

Over **45** years of experience
in polyols

Over the years we have developed an **integrated chemical business** controlling all key factors of the value chain: research, development, manufacturing and distribution.

This **unique vision** enables us to understand our customers needs and requirements. A valuable experience that led us to build the first POSM plant in Europe in the early '70s. An insight that continues today to drive our search for excellence.

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 waste to drive development of new innovative materials 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.

Our ambition is to **recycle the equivalent of 20% of the polyolefins** we produce by 2030 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**



Solutions for the circularity of polyols

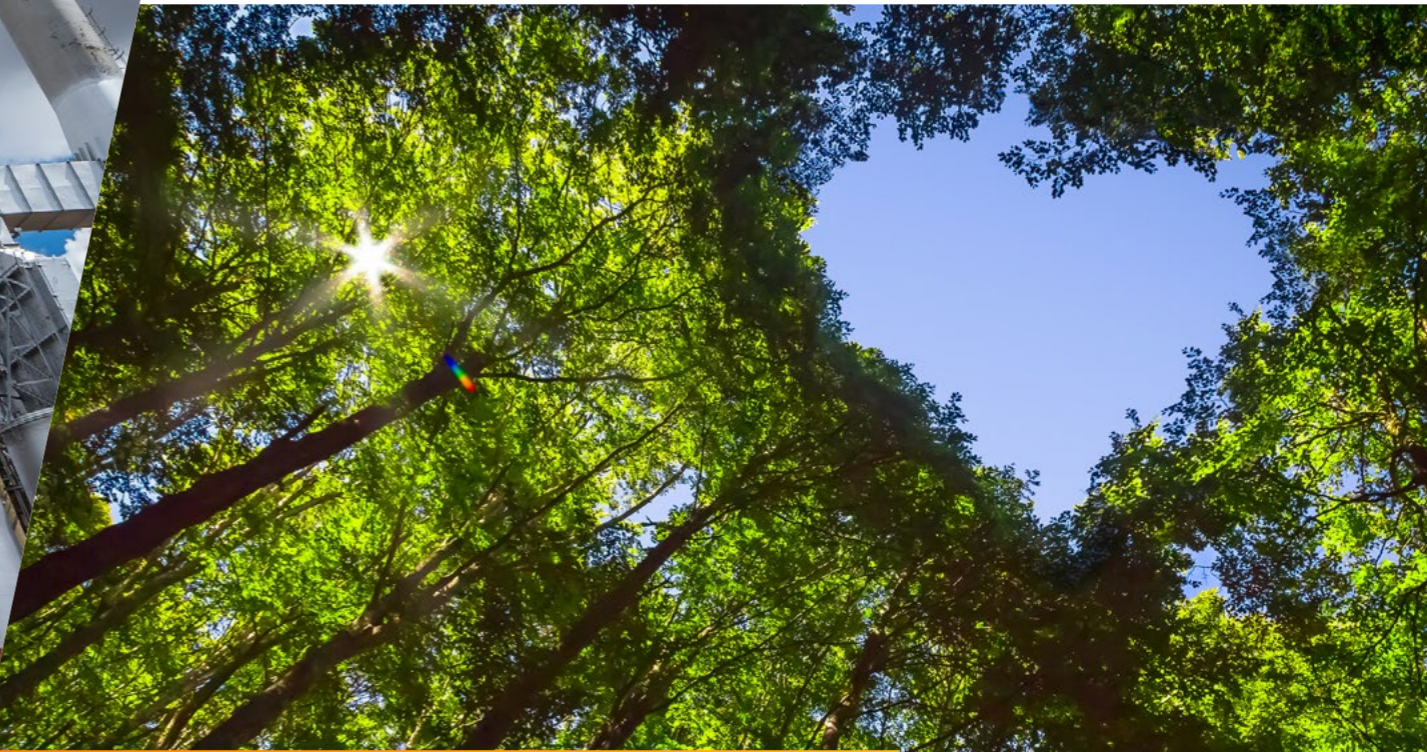
Repsol is positioned as one of the petrochemical companies with the highest commitment to sustainability, offering one of the most extensive circular products portfolios. The projects we develop allow for a production model with maximum optimization of resources and minimal waste generation. These technological solutions respond to the main social and environmental challenges.



RecPur

With this new process, Repsol will produce circular polyols from recycled polyurethane foam, marketed under the Repsol Reciclex® brand.

Repsol plans the start-up for 2022 at its Puertollano Industrial Complex. It will be the first plant in Spain to recycle polyurethane foam, one of the most challenging plastic waste to treat at the end of its useful life.



Zero emissions commitment

We are the first company in the sector to set the net-zero emissions by 2050 goal.

We will invest over 400 million euros until 2025 to reduce 800,000 tons of CO₂ and lay the foundations to transform industrial centers into net-zero emissions facilities.



Please [click here](#) if you wish to obtain further information.



A full range of polyols and benefits within your reach

Over **34** grades
for polyol applications

Our versatility allows us to produce one of the most extensive ranges of polyether polyols in the market for a wide range of industrial sectors like:



We create innovative solutions and adapt them to each specific requirement.

We believe in quality and reliable products you can trust every time.

We know every request is different, that is why we offer a **wide product range for a broad variety of applications:**

- / Polyether polyols for rigid foams
- / Polyether polyols for flexible slabstock & moulding
- / Polyether polyols for CASE applications

We believe in sustainable models. Polyols for rigid foams contribute to increasing energetic efficiency in buildings and electrical appliances by reducing CO₂ emissions.

We are a customer-orientated company. Always ready to listen to our customers' needs.

Our new polyol development, with very low content of volatile organic compounds, strengthens our **commitment with safety and sustainability.**

Polyols for slabstock and moulding applications

Flexible polyols

Grade	Hydroxyl number mg KOH/g	Viscosity 25°C , cP	Description
F-4811	48	560	Non reactive triol 3,500 g/mol molecular weight used in the production of conventional foams for the comfort market
F-5511	55	490	Non reactive triol 3,000 g/mol molecular weight used in the production of conventional foams for the comfort market
F-5611	56	470	Non reactive triol 3,000 g/mol molecular weight, 100% propylene oxide designed to produce conventional CME foams for the comfort market
F-5612	56	470	Trifunctional polyolether 100% PO based with an average molecular weight of 3000 and with a special antioxidant package designed especially for automotive applications
F-2832	28	1,100	Reactive triol 6.000 g/mol molecular weight used in the production of high resilience foams for the comfort market and moulded foams in Automotive industry for applications such as seating and insulation
F-3231	32	1,350	Triol 5,000 g/mol molecular weight and high ethylene oxide content used as cell opener and in the production of hypersoft foams
F-3531	35	800	Reactive triol 4,800 g/mol molecular weight used in the production of high resilience and moulded foams for the comfort market, including furniture and automotive
F-3011	31	1,250	High functionality reactive polyol and high molecular weight used in the production of high resilience and moulded foams for the comfort market, including furniture and automotive
X-7510	250	260	Triol 700 g/mol molecular weight specially designed for the production of T80 viscoelastic foams for the comfort market
X-1070	170	245	Reactive triol 1000 g/mol with high ethylene oxide content, is specifically developed for viscoelastic foams together with Alcupol® co-polyols

Polyols make it possible to obtain foams to suit the specific needs of the different comfort and vehicle applications



The information contained herein is based on REPSOL QUIMICA's current knowledge and experience and is presented in good faith for guidance only. Although REPSOL QUIMICA declares to have been most diligent when including the information contained herein, taking into account that several and different factors may affect the processing, application or use of the products, the convertor shall be responsible in every case for the conditions under which the products are transformed as well as for the final use given to them. REPSOL QUIMICA warns that this information may undergo variations or improvements; therefore REPSOL QUIMICA is not obliged to reflect these in this document or to communicate them to whomever may have access to it. Moreover, these readers should be aware that some or all of the products might be protected by intellectual property rights.

Polyols for slabstock and moulding applications

Polymeric polyols

Grade	Hydroxyl number mg KOH/g	Solid content %	Viscosity 25°C, cP	Description
P-3091	32.5	42	4,500	Styrene and acrylonitrile graft non reactive polyether polyol 42% solid content and low free styrene content used in the production of very high hardness slabstock foams
P-3041	32.5	42	4,500	Styrene and acrylonitrile graft non reactive polyether polyol 42% solid content used in the production of very high hardness slabstock foams
P-3621	38.5	25	1,400	Styrene and acrylonitrile graft non reactive polyether polyol 25% solid content used in the production of very high hardness slabstock foams
P-3921	40.5	20	1,200	Styrene and acrylonitrile graft non reactive polyether polyol 20% solid content used in the production of medium hardness slabstock foams
P-4181	42.5	15	950	Styrene and acrylonitrile graft non reactive polyether polyol 15% solid content used in the production of medium hardness slabstock foams
P-4311	44.0	10	780	Styrene and acrylonitrile graft non reactive polyether polyol 10% solid content used in the production of medium hardness slabstock foams
P-2621	26.0	25	2,800	Styrene and acrylonitrile graft reactive polyether polyol 25% solid content used in the production of high resilience slabstock and moulded foams for the comfort market, including furniture and automotive
P-2921	28.0	20	1,800	Styrene and acrylonitrile graft reactive polyether polyol 20% solid content used in the production of high resilience slabstock and moulded foams for the comfort market, including furniture and automotive
P-3021	30.0	15	1,450	Styrene and acrylonitrile graft reactive polyether polyol 15% solid content used in the production of high resilience slabstock foams for the comfort market

Polymeric polyols make it possible to obtain foams that meet the most demanding market requirements



Environmental chamber for fatigue resistance testing



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Polyols for rigid foams

Grade	Hydroxyl number mg KOH/g	Functionality	Viscosity 25°C , cP	Description
R-1610	160	3.0	250	Non reactive triol 1,000 g/mol molecular weight, 100% propylene oxide, used in the production of OCF foams, rigid foams and non cellular polyurethanes
R-2510	250	3.0	260	Non reactive triol 700 g/mol molecular weight, 100% propylene oxide, used in the production of OCF foams, rigid foams and non cellular polyurethanes
R-3810	380	3.0	350	Non reactive triol 450 g/mol molecular weight, used in the production of rigid foams and non cellular polyurethanes
R-4520	455	4.5	5,250	High functionality sorbitol-glycerol based polyol used in the production of rigid foams for the construction and isolation markets
R-4720	475	5.5	19,000	Very high functionality sorbitol-glycerol based polyol used in the production of rigid foams for the construction and isolation markets

Its insulating properties help to increase the energy efficiency of buildings and appliances, by reducing emissions of CO₂ into the atmosphere



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Polyols for CASE applications

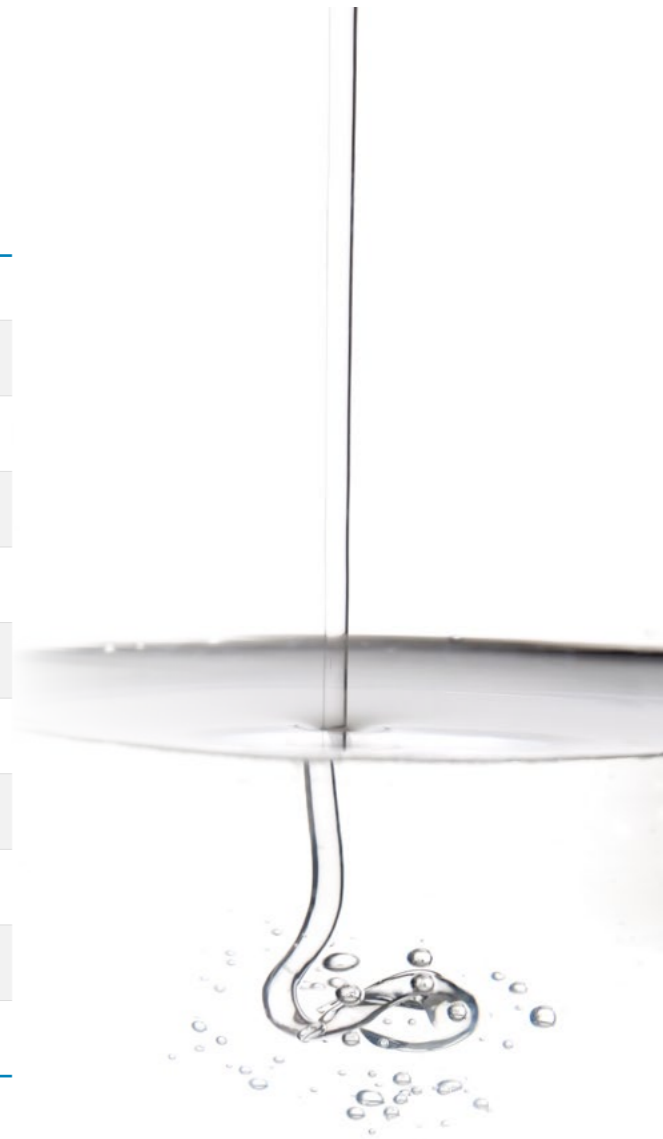
Grade	Hydroxyl number	Viscosity	Description
	mg KOH/g	25°C , cP	
C-4811*	48	560	Non reactive triol 3,500 g/mol molecular weight
C-4814	48	560	Non reactive triol 3,500 g/mol molecular weight
C-5611	56	495	Non reactive triol 3,000 g/mol molecular weight, 100% propylene oxyde
C-5521*	55	500	Medium reactivity triol 3,000 g/mol molecular weight
C-3531*	35	800	Reactive triol 4,800 g/mol molecular weight
C-2832	28	1,100	Reactive trifuntional polyether 6000 molecular weight
D-0411*	280	65	Non reactive diol 400 g/mol molecular weight, 100% propylene oxyde
D-1011*	110	150	Non reactive diol 1,000 g/mol molecular weight, 100% propylene oxyde
D-2021*	56	300	Non reactive diol 2,000 g/mol molecular weight, 100% propylene oxyde
D-2041*	56	375	Low monol polypropylene glycol 2000 molecular weight

* Contains an antioxidant that has been cleared by the FDA for use in food packaging and/or other applications as an indirect food additive

Present in modern coating materials, in vehicles, cables, floors, walls, bridges, roads... they insulate safely and effectively, improving their durability and appearance



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Building trust through safety and transparency

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, packaging facilities and logistics centres all have the ISO 45001 certification for their rigorous safety measures.

Petrochemical complexes,
packaging facilities
and logistics centres

ISO 45001

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

*A global company that seeks the welfare of people
and is a step ahead in building a better future through
the development of smart energy*



Quality

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.

IATF 16949 certified

In 2021 we have obtained the highest certification for our auto products, having adapted all our automotive materials production centers under the IATF 16949 standard, an international standard for quality management systems in the automotive industry.

This standard is the most demanding for quality management systems in the automotive sector at an international level and one of the essential requirements that car manufacturers require from their suppliers.

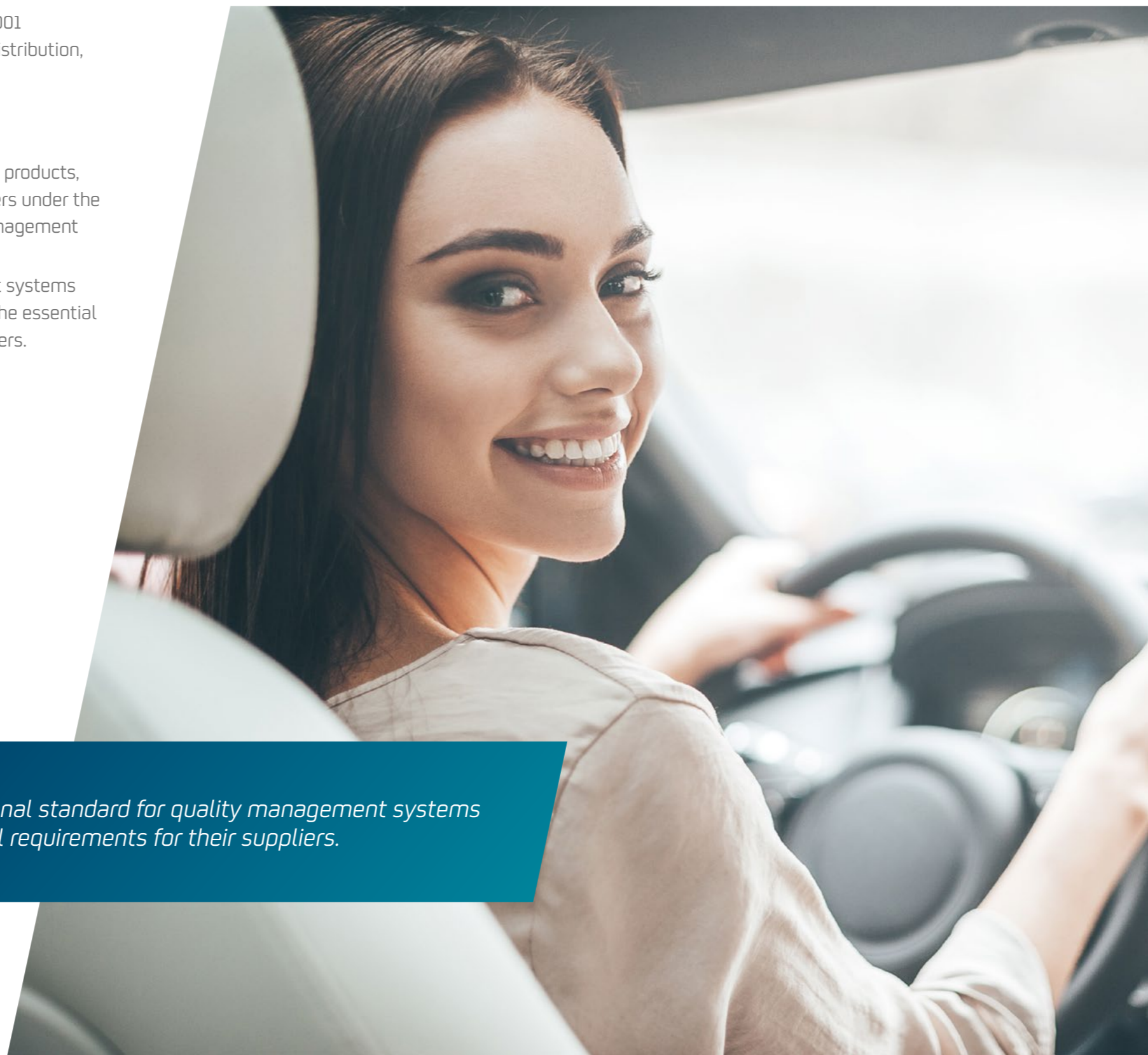
All petrochemical plants

ISO 9001
FSSC 22000

Tarragona, Puertollano
and Monzón plants

IATF 16949

The IATF 16949 is the most demanding international standard for quality management systems in the automotive sector and one of the essential requirements for their suppliers.



Environment

We set up and deploy ambitious CO₂ program reduction, called Plan3030, that pursues a 30% reduction in our carbon intensity indicator. 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 is committed to a reduction of 0.26 million tonnes per year of GHG emissions in 2021-2025 Strategic Plan and 0.7 million tonnes per year reduction until 2030 with a roadmap to be a net zero business sooner than 2050.

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 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

Accountability

Collaboration

Results orientation

Inspiring leadership

Intrapreneurship

Chemicals Customer Care

SPAIN

Tel.: 900 10 32 39
Tel.: + 34 91 753 18 01

PORTUGAL

Tel.: 800 60 501 111
Tel.: +34 91 753 18 05

FRANCE

Tel.: 800 60 503 333
Tel.: +34 91 753 18 02

ITALY

Tel.: 800 60 509 999
Tel.: +34 91 753 18 04

GERMANY

Tel.: 800 60 504 444
Tel.: +34 91 753 18 00

UNITED KINGDOM

Tel.: 800 60 502 222
Tel.: +34 91 753 18 03

sacrq@repsol.com
www.repsol.com



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Corporate Headquarters

Méndez Álvaro, 44
28045 Madrid. Spain
Tel.: +34 91 753 81 00
www.repsol.com

Technical Service & Development Repsol Technology Centre

Ctra. de Extremadura A5, km 18
28931 Móstoles, Madrid. Spain
Tel.: +34 91 753 86 00
atdintermedios@repsol.com



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