
Shell Chemicals
Looking for more out of your foam?

We've got you covered.

Whether you are concerned about foam processing, meeting sustainability targets or reliable supply, Shell CARADOL® polyols provide performance benefits and a reduced carbon footprint with the global scale and reach to meet your needs.

Shell Chemicals has developed a deep understanding of polyurethane foam producers' requirements with more than 60 years of manufacturing Shell CARADOL® polyols for customers around the world in a variety of industries. Through ongoing technical innovation, Shell Chemicals continues to meet our customers' ongoing needs.

Shell CARADOL® is now available with reduced product carbon footprint using Shell's proprietary and efficient low-monol technology and can be formulated to include renewable, bio, or circular sustainable feedstock properties.

The Shell CARADOL® range of products provides a variety of performance enhancements and can be specially formulated to achieve your desired foam properties.

Sustainable offerings

Are you looking to modify your supply mix due to consumer demand drivers, regulatory requirements, or corporate mandates? Our sustainable Shell CARADOL® products provide customers with confidence of reliable supply and delivery. And our integrated global value chain offers customers various feedstock options to satisfy sustainability goals.

Shell CARADOL® made with sustainable feed is an efficient and effective way to increase the sustainable properties of your products using a mass balance approach.

Mass balance is a broadly accepted accounting approach used to ensure the exact quantity of sustainable material used throughout the manufacturing process, which may contain a mixture of sustainable and conventional molecules. Mass balance supports responsible co-processing of sustainable and conventional materials in common facilities, potentially eliminating the need to build separate facilities and infrastructure to introduce sustainable materials into the manufacturing process.

An independent third party certifies the processes and facilities at each step of the value chain to ensure a verified quantity of sustainable resources has been used to displace conventional resources. The integrated platform of Shell Energy & Chemicals Park Rotterdam and Shell Chemicals Park Moerdijk is certified by the International Sustainability & Carbon Certification (ISCC) and uses ISCC PLUS methodology.

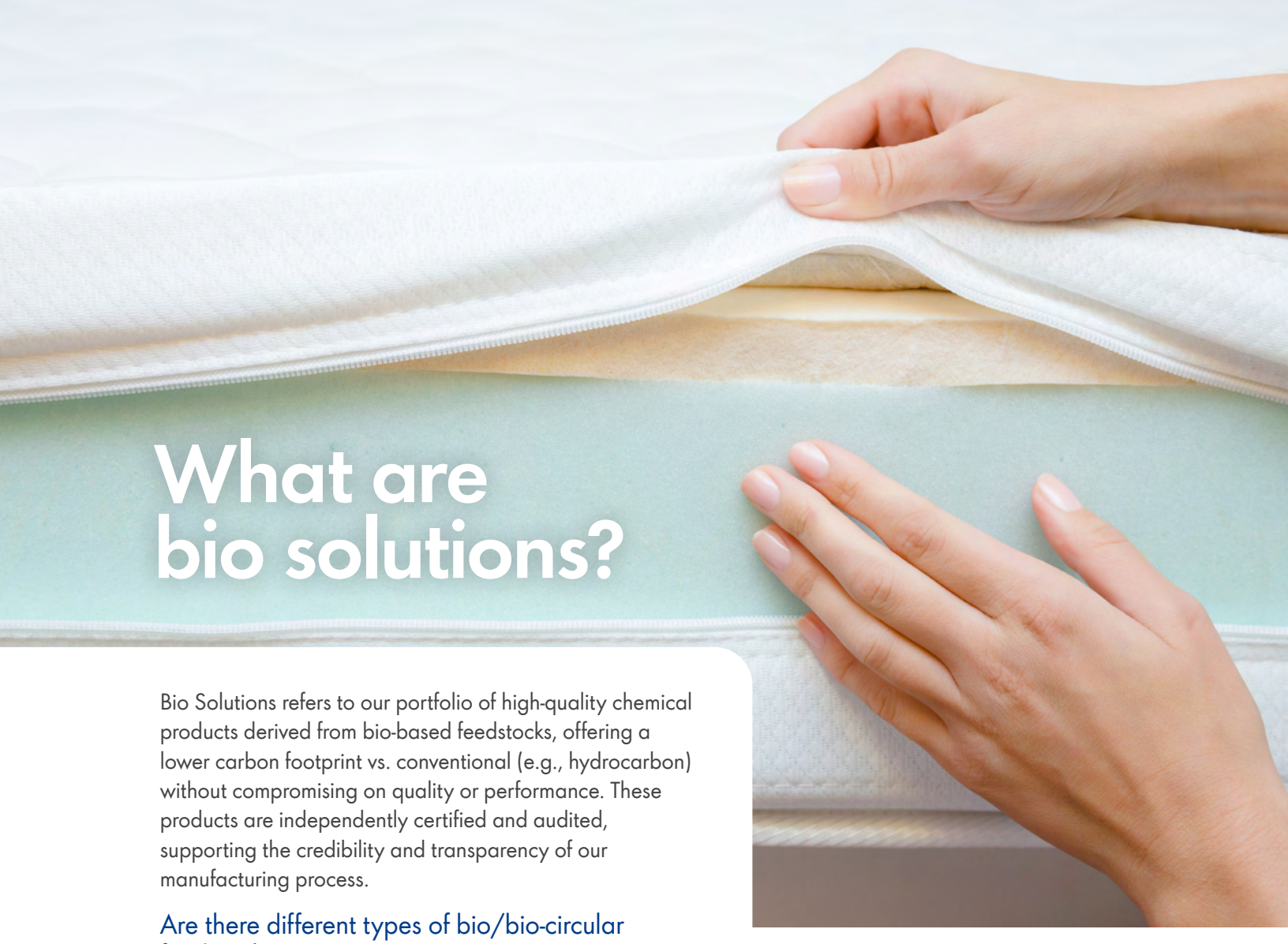
ISCC is a globally recognised, independent organisation that developed a leading certification system which offers solutions to address sustainability requirements for all feedstocks and markets.

In Europe, Shell Chemicals offers a Route to Zero programme designed to help customers navigate the sustainability pathways. Driven primarily by legislation and consumer demand, European businesses must be prepared to tackle pending legislative challenges such as the EU Green Deal. Shell Chemicals can be with you every step of the way as we shape the everyday together.

Technical assistance

Shell Chemicals' customers benefit from our depth of knowledge, technical expertise, and reliable supply at scale.

Foam production is a complex mix of chemical and physical processes, and our application experts can help optimise different types of formulations to best suit your individual and your customers' needs. With more than 65 years of experience in polyols, Shell Chemicals continues to drive technology and research to best serve the industry. We employ a global team of technical experts who provide technical assistance directly to our customers when needed.



What are bio solutions?

Bio Solutions refers to our portfolio of high-quality chemical products derived from bio-based feedstocks, offering a lower carbon footprint vs. conventional (e.g., hydrocarbon) without compromising on quality or performance. These products are independently certified and audited, supporting the credibility and transparency of our manufacturing process.

Are there different types of bio/bio-circular feedstocks?

What are the generations of bio-based typically referred to?

Bio-based feedstocks can range from plant-based biomass to bio-based wastes, such as used cooking oils or animal fats. The different generations of feedstocks include:

1ST Generation

Corn, sugarcane, vegetable oils (e.g., palm, rapeseed), and other plant materials/purpose-grown crops

2ND Generation

Bio-based wastes (e.g., used cooking oils, animal fats, fish oil, forestry, and agricultural waste) and crop residues (e.g., distiller corn oil, palm waste, and cellulosic waste)

3RD Generation

Includes seaweed and algae, and is not part of Shell Chemicals portfolio

What is a circular feedstock?

A circular feedstock is a Shell Chemicals' sustainable product category that includes chemical products produced from feedstocks derived from post-consumer and post-industrial (plastic) waste.

What is a product carbon footprint?

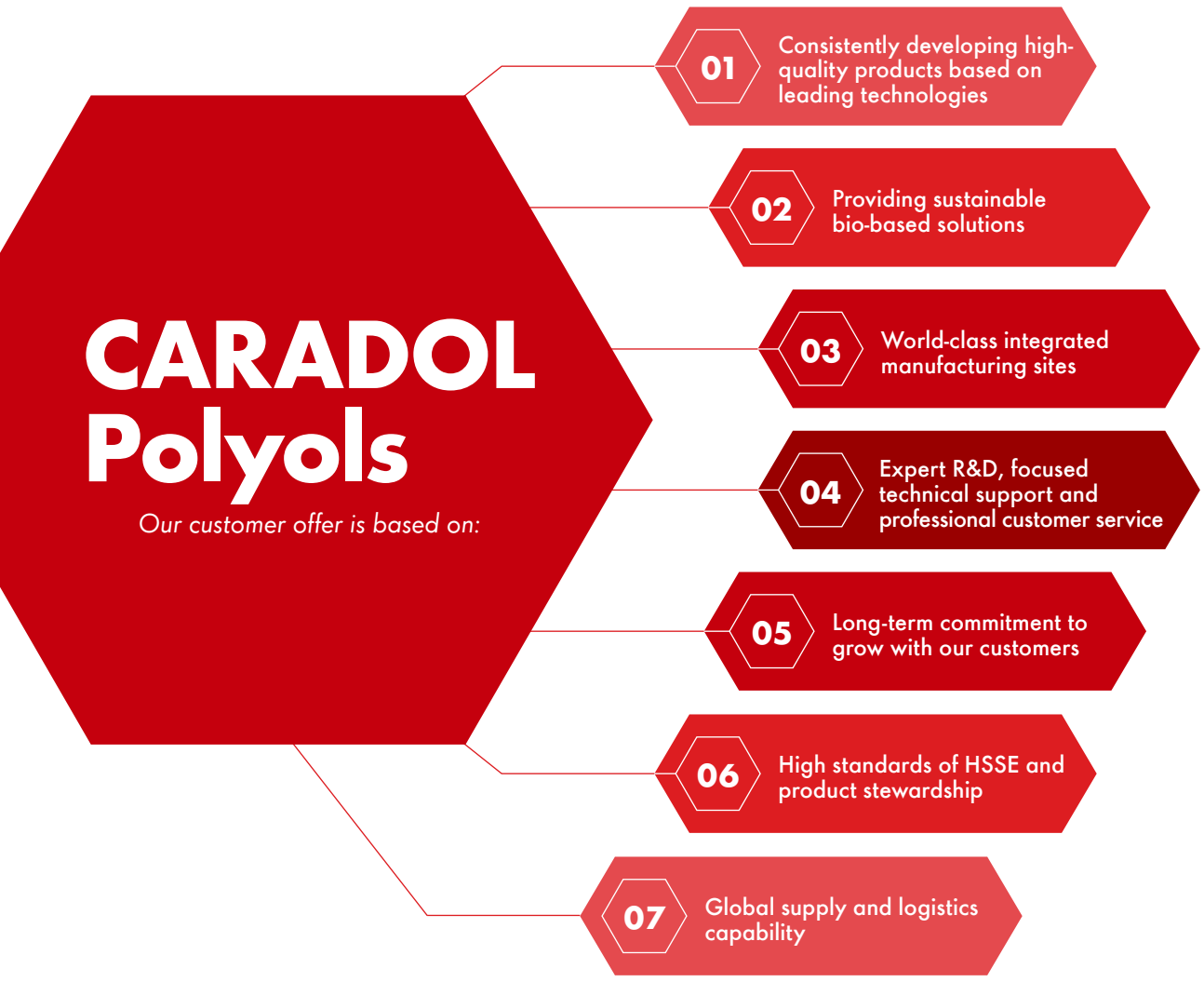
A life cycle product carbon footprint measures the total greenhouse gas emissions generated by a product, from extraction of raw materials to end-of-life. This includes, but is not limited to, feedstocks used to create the product, energy used in manufacturing, transportation emissions, etc. It is measured in carbon dioxide equivalents (CO_2e). Similar to a bio or circular feedstock reducing product carbon footprint, so too can, renewable energy and alternative fuels for transport.

How can carbon compensation projects/solutions help your business?

Shell's greenhouse gas compensation solutions can help you further reduce emissions. These solutions take carbon credits from CO_2 compensation projects and apply them to manage a business's net emission target. They offer immediate, scalable, and cost-effective pathways to lower net emissions.

Shell CARADOL® delivers

Shell CARADOL® is one of the most trusted names in polyols. With more than 60 years of production experience, our new portfolio of sustainable solutions is just one example of how Shell Chemicals continues to meet customer needs.



Our customers don't worry about supply chain gaps

Delivering product safely and efficiently when and where our customers need it

Shell Chemicals takes its role of providing customers with performance products delivered when and where our customers need it very seriously. Doing it safely, securely, and with our customers in mind is a fundamental expectation that we hold ourselves to account. For more than 85 years, we have been putting safety, the environment and the community at the center of our work. We have robust Health, Safety, Security & Environment performance management systems in place, and it is part of our daily routine. We expect our logistics contractors to adhere to strict standards and regularly review performance. We are an active member of the European Diisocyanate and Polyol Producers Association (ISOPA) and a signatory to Responsible Care® global charter.

We're here to help

Shell Chemicals' global reach and scale means we can deliver to our customers around the world – safely and efficiently when and where our customers need it. We know reliable supply is critical to manufacturing processes, and we deliver for our customers. Our integrated production facilities also provide enhanced product integrity.

If you are interested in improving your foam's performance, we're here to help. Develop your custom solutions together with Shell Chemicals at ShellChemicals@shell.com.

Shell CARADOL®

SA170-06

Shell CARADOL SA170-06 is our new 1000-MW ethylene oxide (EO)/propylene oxide (PO) containing triol with excellent cell opening capacity across a broad density range.

Ever wanted to improve the breathability and stability of your visco elastic foam?

Shell Chemicals now offers Shell CARADOL SA170-06 grade of polyols that can be used in the production of viscoelastic foams. This augments our broad array of polyols that offer various foaming properties, including Shell CARADOL SA250-06 and Shell CARADOL SA160-06.

As for all VE grades Shell CARADOL SA170-06 is stabilized with an amine-free and low-VOC antioxidant.

Shell CARADOL SA170-06 provides the ability to tune the porosity (and with that the breathability) of visco elastic foams in a wide density range.

Shell CARADOL SA170-06 offers a wider processing spectrum and can increase the yield of high-quality foam versus regular toluene-diisocyanate (TDI) visco elastic formulations based on a cellopener polyol in combination with other polyols with different molecular weight distribution of reactivity selectivity principal (resp.) 800 and 3500.

Product overview

CARADOL

Polyether polyols for flexible PU foam applications

Polyether polyols for flexible foam applications for Europe, Middle East, and Africa

CARADOL	Nominal molecular weight (g/mol)	Typical hydroxyl value (mg KOH/g)	Typical solids content (%w/w)	Typical viscosity at 25 °C (mPa.s)	Typical product application end use
SC48-08	3500	48	-	670	Low Monol Conventional Slabstock
SC56-15	3000	56	-	490	CME Slabstock
SC56-15S	3000	56	-	600	Low Monol CME Slabstock
MD250-10*	675	250	-	280	Foam Hardener Conventional Slabstock
SA160-06	1000	160	-	230	Visco Elastic Foam
SA170-06	1000	165	-	240	Visco Elastic Foam
SA250-06	675	250	-	280	Visco Elastic Foam
MH55-23	3000	55	-	510	Hot Cure Moulding
MC28-02	6000	28	-	1130	HR Slabstock / Cold Cure Moulding
SA34-05	5000	34	-	860	HR Slabstock / Cold Cure Moulding
SA36-23	4700	36	-	800	HR Slabstock / Cold Cure Moulding
SP30-47		30	45	4230	HLB Conventional Slabstock
SP37-25		37	25	1430	HLB Conventional Slabstock
SP39-20		39	20	1290	HLB Conventional Slabstock
SP42-15		42	15	1110	HLB Conventional Slabstock
SP44-10		44	10	975	HLB Conventional Slabstock
SP22-40N		22	40	5230	HR Slabstock / Cold Cure Moulding
SP27-25N		27	25	1780	HR Slabstock
SP30-15N		30	15	1780	HR Slabstock

*Only for AF Region
HLB: High Load Bearing
HRL: High Resilience

For further information, please contact your local sales representative or visit
www.shell.com/chemicals/caradol

Shell CARADOL®

CASE

ED28-10

Shell CARADOL ED28-10 is our new 4000MW polypropylene glycol with ethylene oxide capping. This polyol is specially suited for CASE applications.

- **Compared to the all PO 4000-MW diol this polyol has higher reactivity**
- **Full compatibility to your current CASE applications**
- **Suitable for 2 K PU elastomer and 1 K PU prepolymer application**
- **Examples include but are not limited to binders, (spray) coating, sportsflooring, shoe sole application, RIM parts for automotive**

ED28-201

Shell CARADOL ED28-201 is our new all propylene oxide (PO) grade delivering improved processability in prepolymer applications.

- **Full compatibility to your current CASE applications**
- **Product can be used in wide range of PU adhesive and sealant applications**
- **FDA compliance available for sensitive applications**
- **Improved reactivity, with shorter process time, in catalysed PU 1 K systems**
- **Examples include but are not limited to binders, spray/ waterproof coatings, and sportsflooring**

Product overview

CARADOL

Polyether polyols for CASE applications

Polyether polyols for CASE applications for Europe, Middle East, and Africa

CARADOL	Nominal molecular weight (g/mol)	Typical hydroxyl value (mg KOH/g)	Typical viscosity at 25 °C (mPa.s)	Typical density at 20 °C (kg/L)	Typical product application end use
ED260-02	400	260	70	1.01	Polypropylene Glycol
ED110-200	1000	110	180	1.01	Low Monol Polypropylene Glycol
ED56-200	2000	56	350	1.00	Low Monol Polypropylene Glycol
ED28-201	4000	28	970	1.00	Low Monol Polypropylene Glycol
ET55-23	3000	55	510	1.02	Reactive Triol
ET36-17	4700	36	800	1.02	Reactive Triol
ET34-08	5000	34	870	1.02	Reactive Triol
ET28-03	6000	28	1130	1.02	Reactive Triol
ED28-10	4000	28	863	1.03	Reactive Diol
ED28-08	4000	28	940	1.03	Reactive Diol
ET48-09	3500	48	665	1.03	Low Monol Triol
ET160-01	1000	160	230	1.02	Low MW Triol
ET380-02	450	380	380	1.05	Low MW Triol
ET250-04	675	250	280	1.03	Low MW Triol
ET570-02	300	570	660	1.07	Low MW Triol
EP500-11	450	500	3100	1.08	High Functionality

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www.shell.com/chemicals/caradol

Product overview

CARADOL

Polyether polyols for FDA-compliant CASE applications*

*COMPLIANT WITH FDA 21 CFR 175.105 ('ADHESIVES'), 175.300 ('RESINOUS AND POLYMERIC COATINGS'), 177.1680 ('POLYURETHANE RESINS') and (EU) No. 10/2011

Polyether polyols for FDA-compliant* CASE applications for Europe, Middle East, and Africa

CARADOL	Nominal molecular weight (g/mol)	Typical hydroxyl value (mg KOH/g)	Typical viscosity at 25 °C (mPa.s)	Typical density at 20 °C (kg/L)	Typical product application end use
ED260-30	400	260	70	1.01	Polypropylene Glycol
ED110-300	1000	110	180	1.01	Low Monol Polypropylene Glycol
ED56-300	2000	56	350	1.00	Low Monol Polypropylene Glycol
ED28-301	4000	28	970	1.00	Low Monol Polypropylene Glycol
ET34-30	5000	34	870	1.02	Reactive Triol
ET28-30	6000	28	1130	1.02	Reactive Triol
ED28-30	4000	28	863	1.03	Reactive Diol
ET48-30	3500	48	670	1.03	Low Monol Triol
ET160-30	1000	160	230	1.02	Low MW Triol
ET380-30	450	380	380	1.05	Low MW Triol
ET250-30	675	250	280	1.03	Low MW Triol

For further information, please contact your local sales representative at:
ShellChemicals@shell.com
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www.shell.com/chemicals/caradol
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Shell Chemicals

Coatings, Adhesive, Sealants, and Elastomers (CASE): stick with one of the most trusted names in polyols.