

Conventional Foam

Make high performing polyurethanes from polyols based on CO₂

Add renewable carbon to furniture cushions and more

Now conventional foams can be made from renewable CO₂. By licensing Econic’s patented process and using our unique catalyst, polyols producers who supply the conventional foam industry can help their customers offer more sustainable, higher performing end products from renewable carbon. Our process enables the production of polycarbonate ether (PCE) polyols, which retain the design aspect of polyether polyols – control over molecular weight, functionality, and backbone composition – while adding CO₂ in a tuneable manner. Higher CO₂ content produces high-viscosity polyols for fine-cell foams, creating structures similar to polyester foams. As an added benefit, PCE polyols can be used with recycled and bio-based polyols.

KEY BENEFITS

Reduce carbon footprint by up to 30%

Transform CO₂ into valuable raw material

Better performance vs. existing polyether polyols

Fully compatible with existing foam equipment

Can be used in formulation up to 100 pphp

Clear and colorless with no odor

REPLACE FOSSIL FEEDSTOCKS

Our catalyst transforms inert carbon dioxide into a reactive feedstock; replacing propylene oxide or ethylene oxide in the polyether production process.

Conventional process with fossil-based raw materials



Econic’s process for polymers with captured CO₂

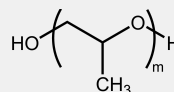


Econic’s renewable carbon + bio + recycled products

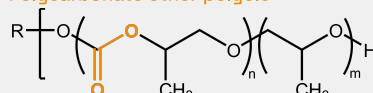


FINETUNE PROPERTIES

Polyether polyols



Polycarbonate ether polyols

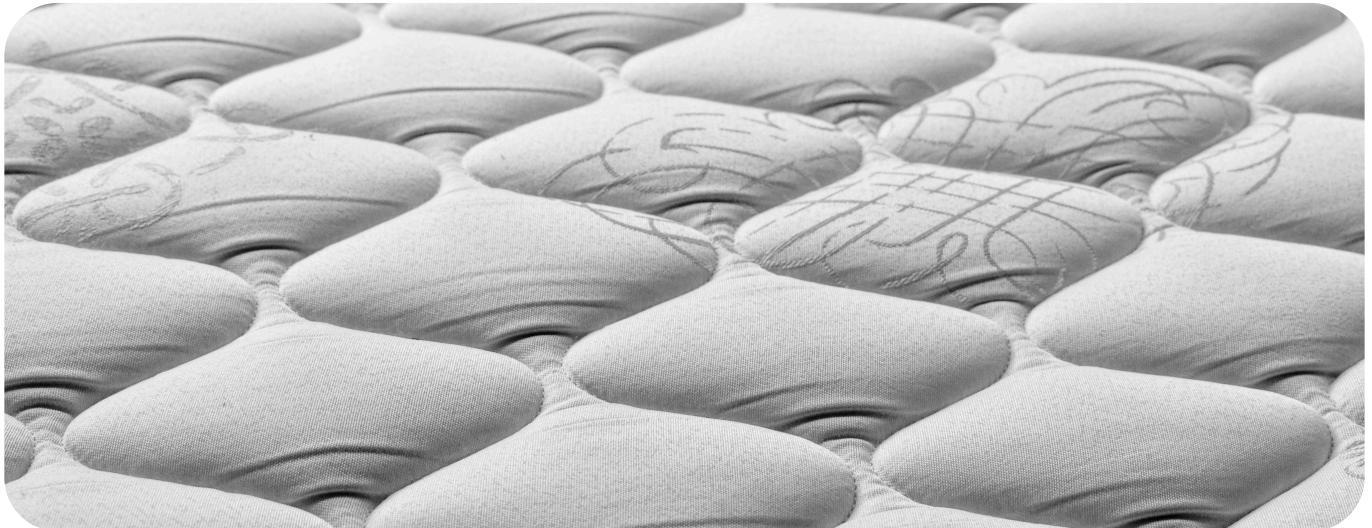


Carbonate linkages can change the properties of polyurethanes.

Our Proof-of-Concept PCE Polyols

	2002-A	2002-B	3003-A	3003-B
CO ₂ Content	17 wt%	20 wt%	10 wt%	16 wt%
Molecular Wt, g/mol	2000	2000	3000	3000
Hydroxyl Number, mg KOH/g	52-58	52-58	50-56	50-56
Viscosity, cPs @ 25°C	~10,000	~20,000	~3,000	~10,000
Acid Value, mg KOH/g	<0.5	<0.5	<0.5	<0.5
Water Content, ppm	<500	<500	<500	<500

Cyclic carbonate content: <0.1 wt%, polydispersity: ~1.3



Turning CO₂ into a resource means more than meeting today’s sustainability demands. In conventional foams, renewable carbon helps create dependable products that perform and last.



RICHARD STEVENSON
ECONIC SENIOR SCIENTIST

Concept Formulations for Conventional Foams

Choose from a range of CO₂ content and performance characteristics

FORMULATIONS

CO ₂ POLYOL %	100	70	50	0	100	70	50	0
PCE 3003-A	100	70	50	-	100	70	50	-
PE3500*	-	30	50	100	-	30	50	100
WATER	4.50	4.50	4.50	4.50	2.50	2.50	2.50	2.50
SURFACTANT	1.10	1.10	1.10	1.10	0.80	0.80	0.80	0.80
AMINE CATALYST 1	0.10	0.10	0.10	0.10	0.08	0.08	0.08	0.08
AMINE CATALYST 2	0.10	0.10	0.10	0.10	0.16	0.16	0.16	0.16
TIN CATALYST	0.12	0.12	0.12	0.14	0.14	0.14	0.14	0.14
ISOCYANATE INDEX	105	105	105	105	105	105	105	105

PERFORMANCE DATA

DENSITY (kg/m ³)	25	25	25	25	42	42	42	42
BALL REBOUND (%)	25	32	34	37	26	33	40	47
TENSILE STRENGTH (kPa)	105	94	105	111	126	109	108	102
ULTIMATE ELONGATION (%)	190	220	250	290	330	340	320	350
CLD, 40% (kPa)	5.9	4.4	5.2	3.9	4.5	3.5	4.3	3.4

*PE3500 Polyether, 3500 MW, EO-PO copolymer

Let's Work Together

Whether you're producing polyols for conventional foams or developing foam products that demand sustainable innovation, we want to partner with you.

Contact us

To learn more about Econic's technology or order polyol samples, email our team at contactus@econic-technologies.com or call us at +44 (0) 1625 238 645.

