

Performance is in our nature.

susterra[®]
bio-based performance



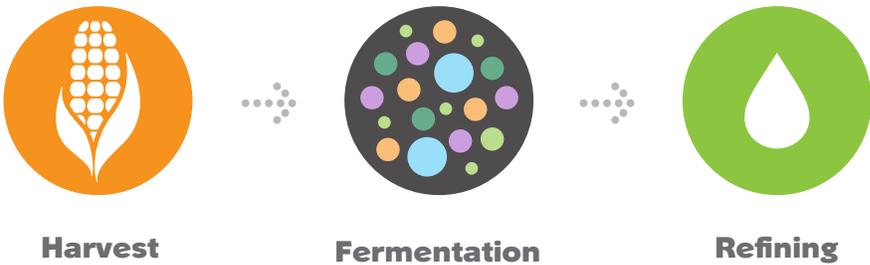
Susterra® Propanediol for Synthetic Leather

Susterra® propanediol is the building block that delivers high performance in a variety of synthetic leather applications, from daypacks and footwear to furniture and vehicle interiors. Made from renewably sourced materials and certified

100% bio-based by the USDA, Susterra® propanediol offers **enhanced abrasion resistance** and **low temperature performance**, as well as **excellent elasticity and a soft hand** versus traditional polyols.

How it's made

Susterra® propanediol is manufactured through a proprietary fermentation process using plant-derived glucose instead of petroleum-based feedstocks. The resulting product is 99.7% pure.



Where it's used

Synthetic leather can be made through a wet process using solvents or through a dry process without solvents. Regardless of the process, the end product has multiple layers—top coat, skin coat, foam layer—that can incorporate Susterra® propanediol as a polyol in the final urethane layer to maximize bio-content.

Polyurethane Synthetic Leather Layers with Average Weight Percent



Susterra® propanediol is used in the PU skin coating. Based on bio-content needs, use in the top coat or foam layer can be explored.

How it performs

Enhanced abrasion resistance

In studies, Susterra® propanediol was evaluated against traditional polyols as a polyurethane dispersion in the skin coat and top layer for a dry process application. Some end-use brands prefer the dry process for manufacturing synthetic leathers because it is solvent-free (no DMF); uses up to 95% less water; and consumes up to 55% less energy. However, it is also harder to manufacture high-quality, durable synthetic leathers using a dry process.

Susterra® propanediol, combined with adipic acid (AA), exhibited enhanced abrasion resistance when compared to butanediol (BDO) combined with AA. When Susterra® propanediol was combined with sebacic acid (Sb), a bio-based alternative to AA, it further improved abrasion performance.

Superior abrasion performance may be achieved by polymerizing Susterra® propanediol to form polytrimethylene ether polyol (PO3G). PO3G or PTMEPOL is not a DuPont Tate & Lyle product; however, it is available through third parties that base their product on Susterra® propanediol.

Low temperature performance

Susterra® propanediol exhibits a low glass transition temperature, which is a strong indicator of improved flexibility at lower temperatures.

Excellent elasticity and a soft hand

Synthetic leather made with Susterra® propanediol feels as soft as genuine leather. Dialed in by the manufacturing process, synthetic leathers made with Susterra® propanediol can also match desired colors, textures and feel.

The greener alternative

From “cradle-to-gate” (extraction and production prior to delivery to the consumer), Susterra® propanediol produces 56% less greenhouse gas emissions and consumes 42% less nonrenewable energy than petroleum-based



At full capacity, our process achieves greenhouse gas emissions reductions equivalent to taking 40,000 passenger cars off the road for one year.



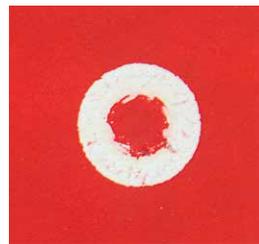
At full capacity, our process saves enough nonrenewable energy to power 1 million 100W incandescent lightbulbs for one year.

Physical Properties of Waterborne PU Leather Prepared by Dry Process

Repeat unit	MEK/30 min	-20°C/ 100,000 cycles	Taber abrasion (H22 1kg/cycle)
-AA-BDO-	pass	crack	700
-AA-PDO-	pass	slight damage	750
-Sb-PDO-	pass	pass	2,100
PO3G	pass	pass	10,000

Physical properties of PU leather (HS%=30 wt%)

PU Leather Abrasion Testing



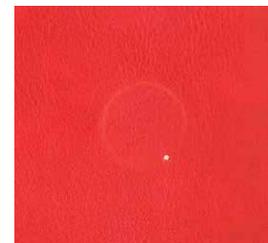
BPO/AA
0% bio-content



PDO/AA
~22% bio-content



PDO/Sb
~70% bio-content



PO3G
~70% bio-content

Taber abrasion testing (H22 1kg/cycle) on various skin coat samples. Each sample was run until 1,500 cycles.

1,3-propanediol. Compared with BDO, Susterra® propanediol produces 52% less greenhouse gas emissions and uses 32% less nonrenewable energy from cradle-to-gate.

susterra-performs.com

About DuPont Tate & Lyle Bio Products

DuPont Tate & Lyle Bio Products Company, LLC., is a joint venture between DuPont, a global science company, and Tate & Lyle, a world-leading renewable food and industrial ingredients company. DuPont Tate & Lyle Bio Products provides natural and renewably sourced ingredients that enhance product performance. We offer solutions for a wide variety of markets and applications through our bio-based performance brands, Susterra® and Zemea®. For more information, visit www.duponttateandlyle.com

