

COVATIONBIO|PDO

**susterra**



**Susterra<sup>®</sup>  
propanediol  
for low-temperature  
heat transfer  
in the food and  
beverage industry**



# Susterra® propanediol offers performance advantages over propylene glycol in these and other low-temperature heat transfer applications.

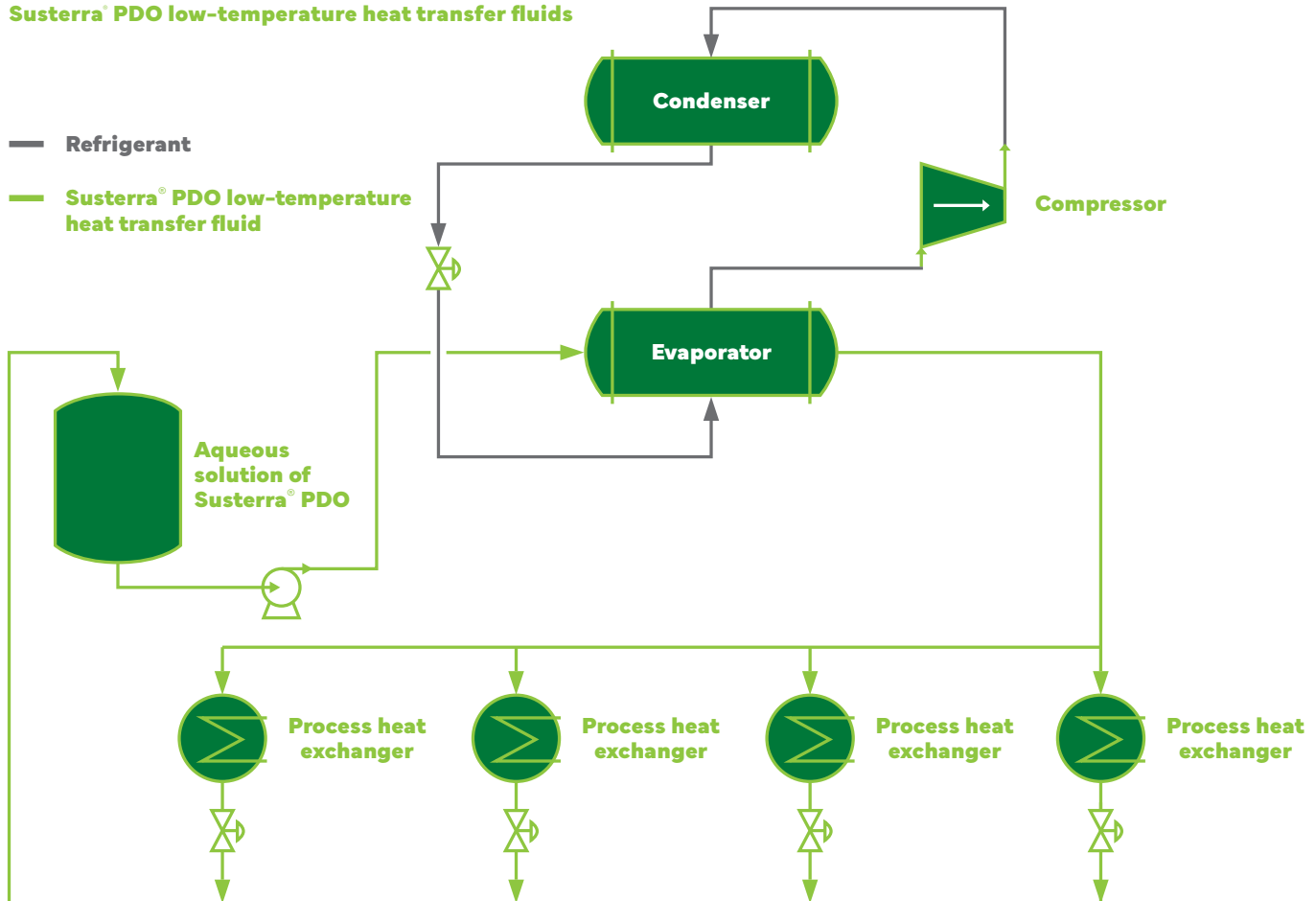
- Food and beverage process cooling
- Immersion freezing
- Liquid food and dairy products cooling
- Fermentation and maturation cooling
- Carbonated beverage cooling
- Plastic bottle blow-molding cooling
- Ice systems

## Susterra® propanediol for low-temperature heat transfer

Susterra® propanediol (1,3-propanediol or PDO) is a high-performing, food-safe alternative to conventional glycols for low-temperature heat transfer applications in the beverage, brewing and food industries. Made from renewably

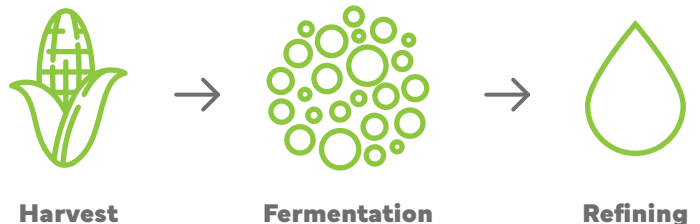
sourced materials and certified by the USDA BioPreferred® program as 100% bio-based, it offers the performance benefits of reduced viscosity and energy saving opportunities versus propylene glycol.

### Susterra® PDO low-temperature heat transfer fluids



### How it's made

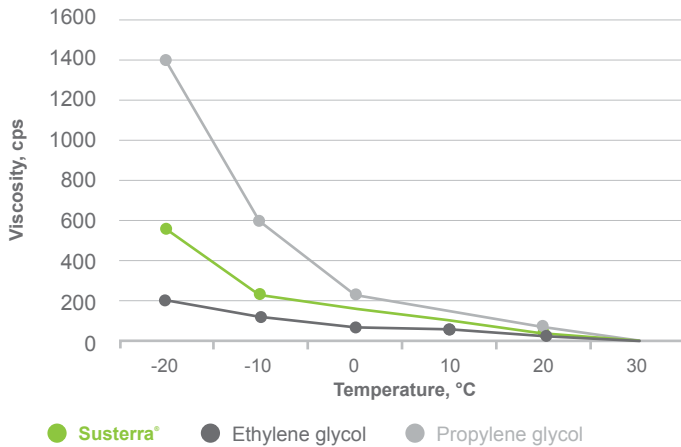
Susterra® PDO is manufactured through a proprietary fermentation process using plant-derived starch instead of petroleum-based feedstocks. The resulting product is 99.7% pure.



# How it performs

## Improved viscosity at lower temperatures

### Glycol viscosity comparison



Propylene glycol and Susterra® PDO are isomers (same formula and molecular weight), but their molecular structures are slightly different. These structural differences translate to Susterra® having a higher boiling point, improved thermal stability and reduced viscosity at low temperature leading to reduced fluid flow rates necessary to achieve the same heat transfer and process cooling, reduced energy consumption to operate the pump, and potentially less maintenance costs on the pump over the life of the system.

## The sustainable alternative

From “cradle-to-gate” (extraction and production prior to delivery to the consumer), Susterra® PDO produces 47% less greenhouse gas (GHG) emissions and consumes 49% less nonrenewable energy than petroleum-based 1,3-propanediol. Compared with propylene glycol, Susterra® PDO produces 42% less greenhouse gas emissions and uses 41% less nonrenewable energy from cradle-to-gate.

### Glycol comparison – pump power usage

Property	Propanediol, 30%	Propylene glycol, 30%
Freezing point, °F (°C)	9.4°F (-12.6°C)	9.2°F (-13°C)
Density (0°C), kg/m <sup>3</sup>	1026	1030
Kinematic viscosity, centistokes	42	69
Power, (kW)	3.1	3.4
Power savings	8.9%	N/A

Operating temperature: 32°F  
Centrifugal pump: 5 hp

Flow: 175 gpm  
Head: 50 ft

In studies, Susterra® PDO exhibited a significantly lower kinematic viscosity than propylene glycol under the same system operating conditions, for an 8.9% reduction in power consumption.

It is readily biodegradable, nontoxic and approved for incidental food contact under the NSF International HTX-1 specification. In fact, some countries have approved its use as a food ingredient.

CovationBio PDO bio-based 1,3-propanediol life cycle assessment data based on Loudon process design data; peer-reviewed by Five Winds International.





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**Susterra® propanediol**  
**Learn more at [CovationBioPDO.com/Susterra](https://CovationBioPDO.com/Susterra)**

CovationBio PDO offers a plant-based, natural and renewably sourced diol that enhances product performance. We offer solutions for a wide variety of markets and applications through our 100% plant-based performance brands, Susterra® and Zemea®. For more information, visit [CovationBioPDO.com](https://CovationBioPDO.com).

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