



## Isobutanol: A Gateway to Chemicals and Fuels

Gevo's commercialization efforts are focused on isobutanol, a naturally occurring four carbon alcohol. Isobutanol is an important platform chemical with broad applications in many chemicals and fuels markets. It is a "drop-in" product that should allow customers to replace petroleum-derived raw materials with isobutanol-derived raw materials without modification to their equipment or production processes. Because isobutanol can drop into existing infrastructure, it should provide for easy integration into existing chemical and specialty fuel production processes.

Gevo's isobutanol has successfully cleared registration with the U.S. EPA as a fuel additive. It is the first isobutanol to be listed in the EPA's Fuel Registration Directory and is now approved for blending with gasoline.

**Isobutanol advantages.** Gevo's isobutanol-based products are chemically equivalent to those produced from petroleum-based raw materials, except they are produced via fermentation from renewable sources.

### Our markets include:

- **Solvents and Coatings.** A solvent-grade renewable isobutanol can be used in the existing butanol market as a cost-effective alternative to petroleum-derived solvents with a lower carbon footprint.
- **Materials, Plastics, and Fibers.** Isobutanol can be dehydrated to produce butenes, which are building blocks for the production of materials such as lubricants, synthetic rubber, PMMA, propylene, xylene, and PET. Gevo's isobutanol can provide chemical companies with an alternative to petroleum-based butenes with potential advantages in cost, predictability and life cycle profile.
- **Biojet Blendstock.** Isobutanol has been converted to kerosene, which is a drop-in blend component for petroleum jet fuel. Bio-based kerosene has the potential to provide a cleaner burning, renewable jet fuel with a lower carbon footprint. Working with the Department of Defense, we have validated that alcohol-to-jet fuel is a clean-burning, homegrown, drop-in option.
- **Specialty Fuels.** For specialized uses, such as small-engine and/or marine fleet engines, it is important to have a fuel that does not cause shortened engine life or create operational safety issues, and can meet EPA emission targets. Isobutanol has a lower Reid vapor pressure value than ethanol and, with 30 percent more energy, generates significantly more renewable fuels (RIN) credits. It has a lower propensity for phase separation in the presence of water and has no stress corrosion cracking compatibility or elastomer incompatibility issues.

Read Gevo's latest white paper, Isobutanol for Transportation Fuels [HERE](#) (PDF).