SOY BASED POLYOLS

Commercialization of Natural Oil Polyols, or NOPs, began in the late '90s to satisfy demand for sustainable products. One of the largest applications of NOPs is for urethane foams, where both Ford and General Motors are sparking demand by implementing NOPs into seats and other automotive foam applications. Such foams are also being introduced in shoe soles, mattresses, furniture, and other foam applications. The chemistry incorporated to make these foams is still emerging, and researchers at the University of Missouri have developed novel high molecular weight polyols and efficient means of production.

An improved process for converting unsaturated vegetable oils into polyols is comprised of one or more of the following conversion mechanisms: i) bodying the vegetable oil to allow for increased hydroxyl equivalent weights, ii) partially oxidizing carbon-cabon π-bonds to attach reactive moieties such as epoxy or alcohol moieties, iii) reacting carbon-carbon π-bonds with monomers containing oxygen moieties, and iv) hydrolyzing ester bonds to replace ester moieties with alcohol moieties. A urethane foam recipe containing both alcohols and epoxies was particularly effective with the polyols of this invention. The useful molecules of this invention are not limited to polyols and applications generally include those applications where alcohols of carbon numbers greater than about 12 are applied. Additionally, two catalysts were identified to have significance.

POTENTIAL AREAS OF APPLICATIONS:

- Anything in the wide range of urethane applications, but particularly consumer products where sustainability of raw materials is desirable
- Insulation for appliances
- Cushions for furniture/vehicles

PATENT STATUS: Non-provisional patents pending

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