Lactones
Analysis of lactones for their optical purity

Application Note

Materials Testing & Research

Authors
Agilent Technologies, Inc.

Introduction
The Agilent CP-Chirasil-Dex CB column is very well suited for the chiral separation of (capro)lactones. The isomers of isopropyl substituted lactones (not shown) will co-elute partly with the propyllactones. For an enzymatically produced, optically pure lactone product, the optical purity can be analyzed at a concentration ratio higher than 100:1 (see Chromatogram 2).
Conditions

Technique: GC-capillary
Column: Agilent CP-Chirasil-Dex CB, 0.25 mm x 25 m fused silica WCOT (df = 0.25 μm) (Part no. CP7502)
Temperature: 100 °C (1 min) → 200 °C, 1 °C/min
Carrier Gas: He, 40 kPa (0.4 bar, 5.7 psi)
Injector: Split, 100 mL/min
T = 250 °C
Detector: FID
T = 275 °C
Sample Size: 1 μL
Concentration Range: 0.5%
Solvent Sample: diethyl ether

Peak identification
1. (+/-)-methyl substituted caprolactone
2. (+/-)-ethyl substituted caprolactone
3. (+/-)-propyl substituted caprolactone

Chromatogram 1

Chromatogram 2:
>99% optically pure ethyl substituted caprolactone

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