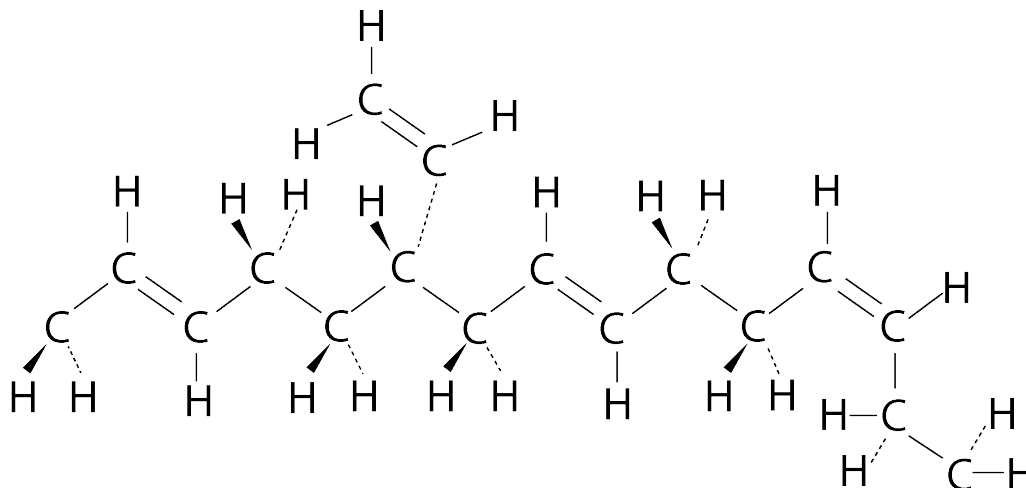


Measuring TBC (Polymerization Inhibitor)

Applied Analytics Application Note No. AN-001



Application Summary

Analyte: *tert*-butyl catechol (TBC)

Detector: OMA-300 Process Analyzer

Process Stream: Butadiene

Zero Fluid: Pure isopropanol

Typical Measurement Range: 0-200 ppm

Introduction

Polymerization inhibitors are chemicals which stabilize reactive monomers and prevent spontaneous polymerization. If too little inhibitor is added to a reactive monomer, polymerization can occur in pipes or vessels and require mechanical removal. On the other hand, if too much inhibitor is added, the final product may have difficulty polymerizing at the intended stage.

Monitoring *tert*-Butyl Catechol (TBC) in Butadiene

TBC is usually added as a polymerization inhibitor to monomers like butadiene. The concentration of TBC in the monomer needs to be regulated at approximately 100 ppm to avoid spontaneous polymerization as well as waste.

TBC has a distinct UV absorbance curve which allows the OMA system to easily monitor its real-time concentration. The full-spectrum analysis is critical for differentiating TBC absorbance from other absorbing impurities like toluene.

Since pure liquid butadiene is very difficult to prepare for system blanking purposes (i.e. at normal temperatures and pressures), pure isopropanol is used to zero the instrument. The full-spectrum analysis allows for normalization of the discrepancy between the butadiene spectrum and the isopropanol spectrum.

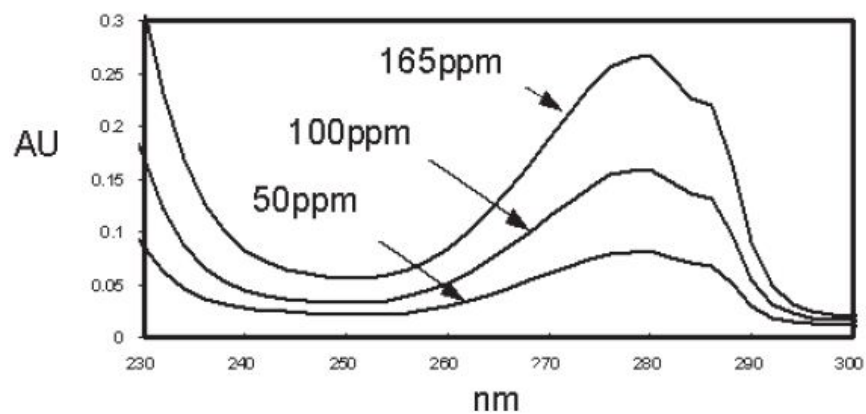
The OMA continuously outputs the TBC reading to the plant's main computer, providing new measurements at a 1-5 second interval — much faster than the traditional HPLC used for this application (15 minute interval). Response time is critical in order to respond quickly to sudden changes in TBC concentration.

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Absorbance Spectra of TBC in Isopropanol

These spectra were taken on calibration standard mixtures of TBC in isopropanol.



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The specifications below represent performance/build of the OMA-300 Process Analyzer in a typical TBC application.

For technical details about the OMA-300 Process Analyzer, see the data sheet:

http://aai.solutions/documents/AA_DS001A_OMA300.pdf

All performance specifications are subject to the assumption that the sample conditioning system and unit installation are approved by Applied Analytics. For any other arrangement, please inquire directly with Sales.

Subject to modifications. Specified product characteristics and technical data do not serve as guarantee declarations.

Application Data	
Performance Specifications	
Accuracy	tert-butyl catechol 0-200 ppm: ± 1 ppm

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Revised 13 April 2017

Further Reading

Subject	Location
OMA-300 Process Analyzer Data sheet	http://aai.solutions/documents/AA_DS001A_OMA300.pdf
Advantage of Collateral Data Technical Note	http://aai.solutions/documents/AA_TN-202_CollateralData.pdf



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