

On-Line Monitoring of Total Aromatics in Hydrocarbon Solvents

Aliphatic hydrocarbon solvents such as isoparaffins, mineral spirits and kerosene require low aromatic content formulations in order to meet their product quality specifications.

Measurement Requirement

The continuous measurement of low ppm benzene, toluene and xylene (BTX) are required to ensure the low aromatic content required by the solvent formulations.

AMETEK Solution

AMETEK Process Instruments has developed the on-line IPS-4 Diode Array Spectrophotometer that provides continuous monitoring of BTX and total aromatics with a reliable, easy-to-use analyzer. Full spectrum analysis with the IPS-4 provides the capability for multiple component analysis in the low aromatics solvent processes.

Process Overview

An important quality control parameter in chemical processes is the measurement of aromatic compounds in the UV spectral region. A typical specification for the low aromatics solvent formulation is that the solvent product should contain less than 100 ppm of total aromatics. The aromatic hydrocarbons measured are benzene, toluene and xylene (BTX).



UV spectra of benzene, toluene and xylene overlap. The overlap results in interference between the three measurements. In the IPS-4, this spectral overlap is handled by the use of a mathematical algorithm developed from calibration samples to report out the BTX plus total aromatics content of the aliphatic hydrocarbon solvents.

The AMETEK IPS-4 Diode Array Spectrophotometer provides on-line quality assurance verification for the aliphatic hydrocarbon solvent process. The fast response time of the IPS-4 enables quick remedial action when off-spec product is detected.

AMETEK IPS-4 Diode Array

The IPS-4 Diode Array Analyzer can be used in a wide variety of gas phase and liquid phase applications. The IPS-4 provides the following features:

- ▶ No moving parts in the optical bench provide excellent wavelength stability
- ▶ Fast optical response of diode array
- ▶ Modular integrated photometer system for UV, VIS and NIR applications
- ▶ Full spectrum analysis allows use of mathematical algorithms for difficult applications
- ▶ Xenon flash lamp source provides long service life – typically greater than two years
- ▶ Easy-to-use, multi-language vacuum fluorescent display
- ▶ Optional heated sample cell compartment available for operation up to 150° C
- ▶ MODBUS RTU communications protocol
- ▶ Auto zero and auto calibration capability
- ▶ NEMA 4X indoor/outdoor housing

Process Instruments' Expertise

The implementation of the IPS-4 Diode Array Spectrophotometer includes the full global sales, service and training support of the AMETEK Process Instruments Division. AMETEK's application expertise in chemical processes and handling of toxic and corrosive samples ensure the successful installation of the IPS-4 Analyzer for on-line monitoring of BTX in aliphatic hydrocarbon solvents.



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One of a family of innovative process analyzer solutions from AMETEK Process Instruments.
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