better analysis counts

Monitor Chlorine in Crude at Sub-ppm Levels

Benchtop and Online Analysis Solutions

Total Chlorine Analysis in Liquid Hydrocarbons

Clora® is a compact analyzer to measure total chlorine in liquid hydrocarbons such as aromatics, distillates, heavy fuels, crude oils, and aqueous solutions. Clora delivers unprecedented accuracy and precision for petroleum and petrochemical applications where ease-of-use, reliability and measurement speed are critical.

Applications

- Total chlorine analysis from aqueous solutions and aromatic products to heavy fuels, crudes, and catalyst
- For refineries, petrochemical and additive plants, pipeline terminals, and test laboratories

Features and Benefits

- LOD: 0.13 ppm for hydrocarbons
- LOD: 0.3 ppm for aqueous samples
- Dynamic Range: 0.13 ppm to 3000 ppm
- Fits on any lab bench
- Easy to use
  - Intuitive touch screen
  - Just plug-in and measure
  - Measurement time: 30-900 s
- Extremely low maintenance: no conversion gasses, heating elements, columns, or quartz tubing

Options

- LIMS data output compatible software
- Extended Range (XR): 0.13 ppm to 4 wt%
- Catalyst testing capability
- Accu-flow*
- 8-cell Autosampler*
- Accucell Sample Basket Available

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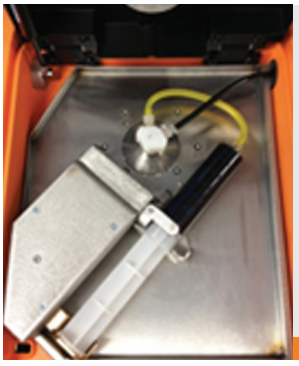
Clora
Chlorine Analyzer

Accu-flow and Autosampler options cannot be combined.

ASTM D7536 and D4929



Get Accu-flow to Eliminate Particle Settling

The optional Accu-flow design allows the sample to flow continuously during the measurement. This continuous flow eliminates the settling of chlorine, producing accurate and precise total chlorine results.

ACCU-FLOW

Twice the Precision, Twice the Performance

Clora® 2XP is designed for use with liquid hydrocarbons such as aromatics, distillates, heavy fuels and crude oils, as well as aqueous solutions. The enhanced precision of Clora 2XP is ideal for testing related to catalyst poisoning in reformers or for sites with fluid catalytic crackers and hydrocrackers monitoring very low levels of chlorine.

Applications

- Total chlorine analysis from aqueous solutions and aromatic products to heavy fuels and crudes
- For refineries, petrochemical and additive plants, pipeline terminals and test laboratories

Features and Benefits

- LOD: 0.07 ppm in 600 s
- Dynamic Range: 0.07 ppm - 2 wt%
- Automatic sulfur correction
- Fits on any lab bench
- Easy to use
  - Intuitive touch screen
  - Just plug-in and measure
  - Measurement time: 30-900 s
- Extremely low maintenance: no conversion gasses, heating elements, columns, acids, or quartz tubing
- Replaceable air-cooled X-ray tube

Options

- LIMS data output compatible software

17 35.45 Clora 2XP Chlorine Analyzer

ASTM D7536 and D4929

Automatic Sulfur Correction

Many heavy samples, like crude oil, VGO or coker residual, may have percent-level sulfur present while chlorine may be as low as a few parts per million. High sulfur levels will typically depress the chlorine measurement result during XRF analysis. Clora 2XP is able to measure the chlorine and sulfur concentrations simultaneously, and the sulfur counts information is then used to automatically correct the chlorine measurement.

TWO critical measurements, ONE push of a button, ZERO hassle

Sindie +Cl® is a two-in-one instrument enabling trace analysis of both sulfur and chlorine with one push of a button. It is the ideal solution to certify sulfur levels in finished products, assess chlorine for corrosion mitigation, and optimize process parameters.

Applications

- Total sulfur analysis from ultra low sulfur fuels to crudes
- Total chlorine analysis from aqueous solutions and aromatic products to heavy fuels, crudes, and catalyst
- For use in refinery labs, pipeline terminals, additive plants and inspection laboratories

Sindie +Cl
Sulfur and Chlorine Analyzer

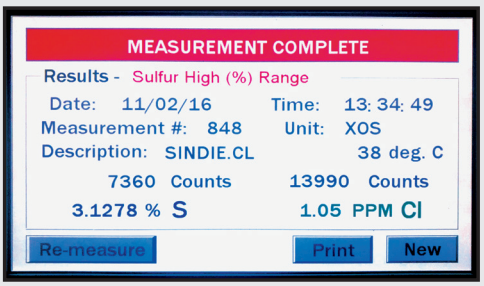
Features and Benefits

- Sulfur
  - LOD: 0.4 ppm at 300 s
  - Dynamic Range: 0.4 ppm to 5 wt%
- Chlorine
  - LOD: 0.3 ppm at 300 s
  - Dynamic Range: 0.3 ppm to 3000 ppm
- Extremely low maintenance: no conversion gasses, heating elements, columns, or quartz tubing
- Automatic sulfur correction for chlorine
- Easy to use
  - Intuitive touch screen
  - Just plug-in and measure
  - Measurement time: 30-900 s
- Fits on any lab bench

Options

- LIMS data output compatible software

ASTM D2622, D7039, D7536, D4929, SH / T 0842



Two Critical Measurements

Sindie +Cl performs trace analysis of both sulfur and chlorine with one push of a button. You can measure both elements in one sample, or measure each separately by simply inserting a new sample.

Online Chlorine Analysis in Liquid Hydrocarbon Process Streams

Chlorine contributes significantly to the corrosion of plant equipment and must be treated accordingly. With ever-changing crude quality and potential for process upsets, chlorine levels can shift quickly, making real-time analytical results invaluable. Powered by MWDXRF®, Clora® Online uses ASTM D7536 technology and delivers real-time, continuous analysis of total chlorine from 0.2 ppmw up to 3000 ppmw. By monitoring desalted crude, a plant can optimize performance and immediately see impacts of crude changes (including organic chloride). This process analyzer is ATEX and NEC certified for hazardous area locations.

Applications

- Upstream desalting, refining, power generation and effluent management
- Total chlorine analysis in:
  - raw and desalted crudes
  - water and effluent streams
  - refinery process streams
  - finished product

Features

- Uses ASTM D7536 technology
- ATEX Zone 1 and NEC Cl I Div 2 Certified
- LOD: 0.2 ppmw in hydrocarbon matrices @ 300 s
- LOD: 0.6 ppmw in aqueous streams @ 300 s
- Dynamic range: 0.2 ppmw – 3000 ppmw
- Calibration is linear up to 3000 ppmw and one calibration curve runs all hydrocarbon matrices
- Robust industrial design: wall mounted or stand alone

Benefits

- Continuous, real-time analysis
- Rapid response to upsets
- Easy to use with intuitive touch screen interface
- Direct measurement in ppm wt
- Low Maintenance: no consumable liquids, gasses, combustion, or sample conversion
- Not sensitive to sample temperature changes

Options

- Multi-stream analysis capability
- Auto-validation capability

17 35.45 Clora ONLINE Chlorine Analyzer

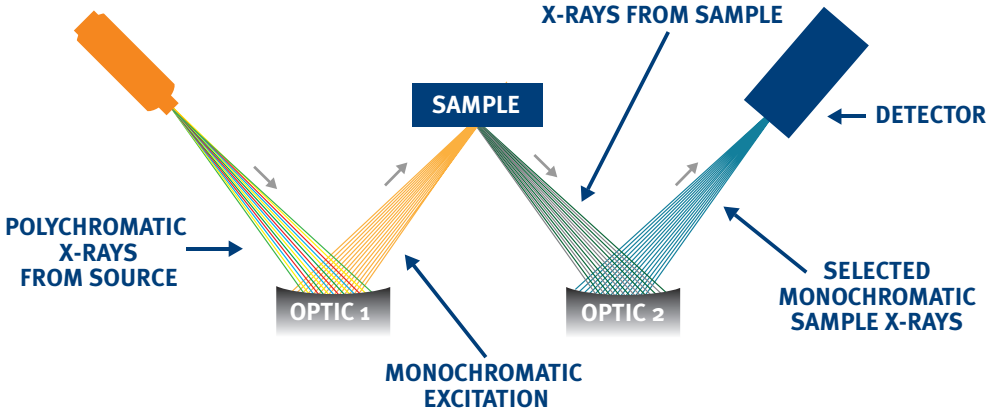
ATEX and NEC Certified

Benchtop and Online Chlorine Analysis

Monitoring chlorine for corrosion mitigation is critical during refining processes. Chlorine can poison expensive catalysts and lead to corrosion in overhead or reactor effluent systems. Clora® analyzers offer breakthrough analytical solutions for the determination of chlorine in liquid hydrocarbon samples such as aromatics, distillates and heavy fuels, and aqueous solutions.

Advanced Analysis with MWDXRF

Monochromatic Wavelength Dispersive X-ray Fluorescence (MWDXRF) utilizes state-of-the-art focusing and monochromating optics to increase excitation intensity and dramatically improve signal-to-background ratio compared to traditional WDXRF instruments. This enables significantly improved detection limits, precision, and a reduced sensitivity to matrix effects. A monochromatic and focused primary beam excites the sample and secondary characteristic fluorescence X-rays are emitted from the sample. A second monochromating optic selects the chlorine characteristic X-rays and directs these X-rays to the detector. MWDXRF is a direct measurement technique and does not require consumable gasses or sample conversion delivering robust and low-maintenance analyzers with dramatically lower detection limits and faster response times.



Eliminate Particle Settling with Accu-flow

Accu-flow technology helps to minimize the effects of particulate settling, which is common when testing for chlorides in crude oil using XRF in the laboratory. Over a typical measurement cycle, the heavier particles can settle to the bottom of the sample cup and cause higher than normal results. Accu-flow pushes the sample through the system keeping the sample uniform, delivering a result that better reflects crude streams as they exist in the refinery. Accu-flow is available with Clora® benchtop analyzers.

ACCU-FLOW

XOS®
better analysis counts

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