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Clora[®] Bench-Top Analyzer Chlorine

The Clora Bench-Top analyzer is a compact Chlorine analyzer, designed for use with liquid hydrocarbons such as aromatics, distillates, heavy fuels and crude oils, as well as aqueous solutions.

The analyzer delivers unprecedented accuracy and precision for petroleum and petrochemical applications where ease-of-use, reliability and measurement speed are critical.

The analyzer's Monochromatic WD XRF analytical technique offers a limit of detection as low as 0.13 ppm wt. with a dynamic range up to 3000 ppm wt. This direct and non-destructive measurement technique does not require high temperature sample conversion or consumable gases.

The Clora Analyzer is ideal for laboratory and rugged industrial environments requiring minimal maintenance support.



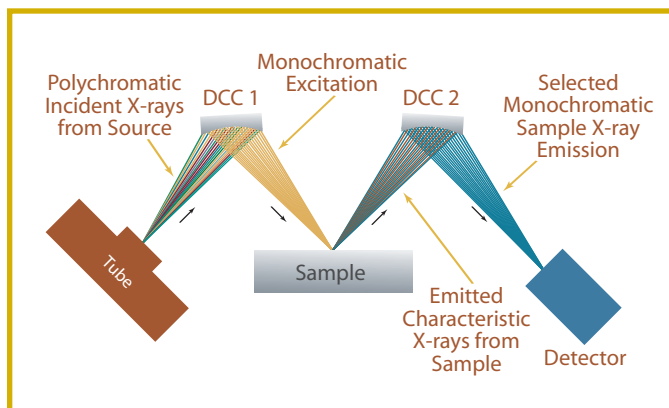
APPLICATION AREAS:

- Total Chlorine analysis from aqueous solutions and aromatic products to heavy fuels and crude oils up to 3000 ppm.
- For refineries, petrochemical plants, pipelines, additive companies and test laboratories

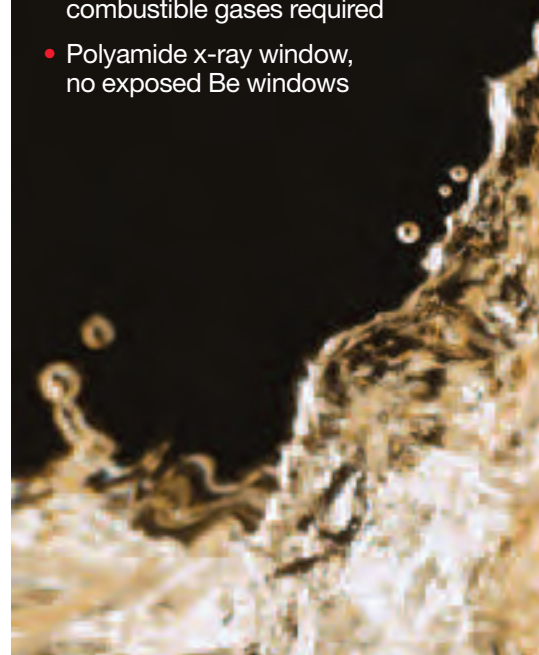
FEATURES AND BENEFITS:

- LOD: 0.13 ppm wt.
Dynamic range: 0.13 – 3000 ppm wt.
- Repeatability:
Low level Cl Concentration in Isooctane Std. Dev.
 - 0.3 ppm - 0.031 ppm
 - 0.5 ppm - 0.069 ppm
 - 7 ppm - 0.26 ppm
- Fits on any bench, in any lab:
14.5" w x 19.5" d x 13.5" h
- Plug-and-go design: standard wall power is only utility required
- User-friendly with touch screen interface
- User programmable measurement time: 30s-600s.
- Extremely low maintenance:
 - No conversion gases
 - No columns
 - No heating elements
 - No quartz tubing
- Replaceable air-cooled X-Ray tube
- No sample conversion or combustible gases required
- Polyamide x-ray window, no exposed Be windows

FIGURE 1
Analytic Engine Configuration



- Monochromatic excitation = Extremely low background
- No moving parts in analyzer engine
- No consumables or sample conversion required
- Simplified matrix correction



Typical XOS Clora Bench-Top Specifications

TABLE 1. Weighted linear regressions results for four matrices.

Measurement	H ₂ O	Crude oil	Xylene	Isooctane
Slope count/sec/ppm	0.333±0.003	0.781±0.005	0.783±0.001	0.823±0.005
Intercept count/sec	0.54±0.11	0.74±0.17	0.672±0.047	0.64±0.1
Correlation Coefficient	0.9997	0.9998	0.999998	0.999998

TABLE 2. Repeatability. Successive low-level Chlorine measurements of crude oil and Isooctane with various chlorine concentrations, on same analyzer.

Matrix	Crude oil	Isooctane		
Nominal Cl level (ppm)	<5	0.3	0.5	7
Measurement time(s)	120	300	300	300
Measured Cl (ppm)	3.19	0.34	0.57	8.1
	3.15	0.39	0.71	7.60
	3.37	0.37	0.58	7.70
	3.21	0.31	0.56	8.10
	3.00	0.38	-	-
Mean (ppm)	3.19	0.36	0.60	7.88
Stand. Dev. (ppm)	0.13	0.031	0.069	0.26

Test Method	Monochromatic WD XRF
Dimensions	14.5" w x 19.58" d x 13.5" h
Power	100-120 V AC, 47-63 Hz at 6.0 Amps 200-240 VAC, 47-63 Hz at 6.0 Amps
Other Utilities	None
Sample Cup Volume	~ 8cc
I/O Ports	Ether net 10/100 base T RS 232
Optional Computer Interface	Pentium, 100MHz, 32 MB RAM Windows 98 or newer operating system
Ambient Temperature Requirements	5–40°C (40–104°F)
Dynamic Range	0.13 ppm–3000 ppm (wt.)
Measurement Time	30-600 seconds user programmable



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