

# Silicon Analysis in Petroleum and Bio Fuels

From gasoline to ethanol and toluene, Signal® delivers total silicon analysis. Powered by MWDXRF®, Signal is a robust analysis solution for demanding petroleum and industrial environments.

## Applications

- Total silicon analysis in hydrocarbons and bio fuels
- For use in refinery labs, pipeline terminals, additive plants, and inspection laboratories

## Features and Benefits

- LOD: 0.65 ppm at 600 s
- Dynamic Range: 0.65 ppm - 3000 ppm
- Fits on any lab bench
- Touch Screen user interface
- User programmable measurement time: 30-900 s
- No conversion gasses, heating elements, quartz tubes or columns
- 75 W air-cooled excitation tube

## Options

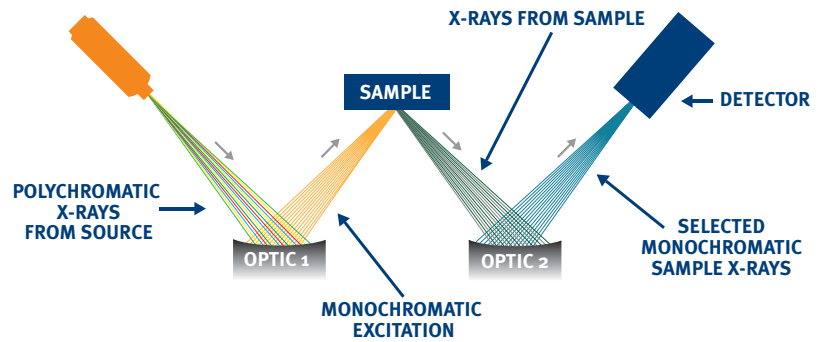
- LIMS data output compatible software

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**Signal**  
Silicon Analyzer

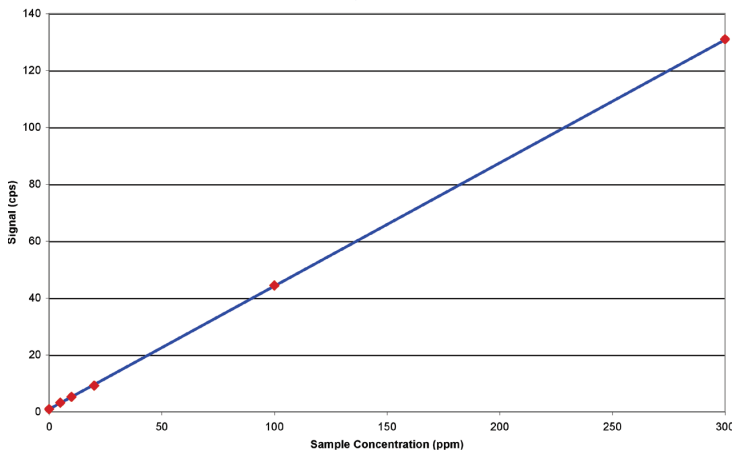


## TRUSTED PRECISION

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 over high power traditional WDXRF instruments. This enables significantly improved detection limits and 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 silicon 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.



## Low Range Calibration



## LOW RANGE CALIBRATION

Signal uses a weighted least squares regression which is extremely linear and easy to set up. Typical correlation (R value) is expected to be on the order of 0.999 or better.

## Product Specifications

|   |   |
|---|---|
| <b>Model</b>                            | Signal  |
| <b>Test Method</b>                      | ASTM D7757  |
| <b>Dimensions</b>                       | 37 cm (w) x 50 cm (d) x 34 cm (h)                                       |
| <b>Power</b>                            | 100-120 VAC, 47-63 HZ at 6.0 Amps/<br>200-240 VAC, 47-63 HZ at 6.0 Amps |
| <b>Sample Cup Volume</b>                | 10 ml   |
| <b>Ambient Temperature Requirements</b> | 5-40° C (40-104° F)   |
| <b>Dynamic Range</b>                    | 0.65 ppm - 3000 ppm   |
| <b>Measurement</b>                      | User selectable: 30-900 s   |
| <b>Calibration</b>                      | 8 calibration curves. Automatic and manual calibration functionality    |

## Precision

Typical repeatability (r) and reproducibility (R) values in gasoline, at 95% confidence. 600 s measurement time.

| Silicon Concentration (ppm) | r   | R   |
|-----------------------------|-----|-----|
| 2                           | 0.4 | 0.7 |
| 5                           | 0.5 | 0.8 |
| 8                           | 0.6 | 1.0 |
| 15                          | 0.8 | 1.4 |
| 100                         | 2   | 4   |
| 500                         | 5   | 10  |



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