

# Measure H<sub>2</sub>S in Bitumen or Heavy Fuel Oils

with the

## H<sub>2</sub>S Analyzer 320

### Characteristics

- For bitumen, asphalt, heavy fuel oils, crude and other refinery products
- Measures H<sub>2</sub>S, SO<sub>2</sub> in liquid and vapor phase
- Measures dissolved and evolving H<sub>2</sub>S
- Temperature range +30 ... +200 °C
- Gas tight sampling and storage cartridges
- Portable test unit - can be used on-site

### Present Situation

The test methods for bitumen, asphalt and heavy fuel oils used up to date are in general not giving reliable data, take a long time or are very expensive. Thus providing only insufficient solutions for requirements of most laboratories. The inadequate reliability of these test methods implies a big risk for health, safety and environment. The need for reliable test methods has increased over the past years. The reduce of limits for H<sub>2</sub>S content in bitumen and heavy oils strengthened this development additionally. To meet this increased demand Clariant developed a new method to measure H<sub>2</sub>S especially in bitumen. PSL moves the patented method into an instrument.

### New method - Enhanced Possibilities

The H<sub>2</sub>S Analyzer 320 measures dissolved and evolving H<sub>2</sub>S and SO<sub>2</sub> in bitumen and asphalt, a wide range of crude oils and refinery products under temperatures of up to +200 °C. The instrument provides very accurate and reliable results within the whole measuring range. The H<sub>2</sub>S Analyzer 320 works for a wide range of emission levels from 0.1 to 10,000 ppm H<sub>2</sub>S for the liquid phase and up to 1,000 ppm in vapor phase.

### Your Benefit

With the H<sub>2</sub>S Analyzer 320 you reduce scavenger treatment costs. You save development and measuring time compared to the actually used test methods. Your project costs reduce accordingly.

Testing of blending and with scavenger treated samples will get you much more accurate results over the measurement range. It fulfills the needed stringent conditions for a quick check on heavy fuel oils, bitumen, asphalt for specific plant and storage conditions. Scavenger treatment can be optimized, adjusted to your application and actual operating conditions allowing a significant increase in product safety.



## Measuring Principle

The measuring principle of H<sub>2</sub>S Analyzer 320 is based on DyMS method. The instrument is equipped with a multi-functional sampling, storage and preparation cartridge where the sample will be mixed permanently and held on temperature up to +200 °C. The sample is pumped into the measurement cartridge - loaded with a high boiling point solvent - and mixed continuously. Afterwards the H<sub>2</sub>S is stripped off by purging nitrogen through the liquid.

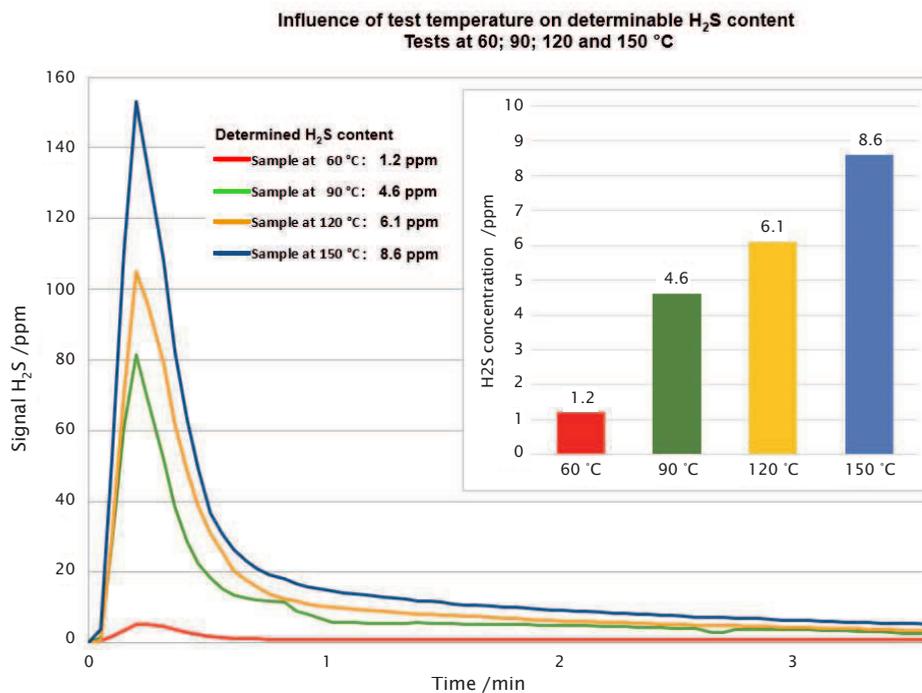
The use of inert gas nitrogen avoids oxidation of true H<sub>2</sub>S. The H<sub>2</sub>S concentration is finally detected by an electrochemical sensor.

In general a measurement requires 15 to 30 minutes. The results will be recorded, calculated and stored.

Further sulphur compounds like SO<sub>2</sub> may be measured simultaneously when respective sensors have been installed.

The set-up of H<sub>2</sub>S Analyzer 320 further allows the preparation of a second test sample while the first is still running. This feature increase the test flexibility and frequency.

By high temperature testing the risk of secondary H<sub>2</sub>S - forming out of other sulphur components at high temperatures - can be analyzed.



## Specifications:

Media:	Bitumen, asphalt, crudes, heavy fuel oil and other refinery products
Temperature range:	+30 .. +200 °C (+86 .. +392 °F)
Tested sample condition:	Liquid and vapor phase
Measuring range:	0.1 .. 10,000 ppm in liquid phase / 1 .. 1,000 ppm in vapor phase
Detected emissions:	H <sub>2</sub> S - other gases available on request
Pressure range:	up to 6 bar (87 psi)
Carrier gas:	Nitrogen N <sub>2</sub> (Inert gas)
Typical test duration:	15 to 30 minutes
Sample amount each test:	1 to 60 ml (typical 5 - 10 ml)
Sample storage container:	Two containers, 160 ml each
Sample viscosity range:	1 .. 3,000 mm <sup>2</sup> /s
Voltage input:	230 V~ or 115 V~
Weight:	35 kg
Dimensions (WxDxH):	36 x 43 x 21 cm, height with tubing: 50 cm