

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

## with the H<sub>2</sub>S Analyser 320

### Characteristics

- For bitumen, asphalt, heavy fuel oils, crude and other refinery products
- Measures H<sub>2</sub>S, light mercaptan, 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 the DyMS method to measure H<sub>2</sub>S especially in bitumen. PSL moves the patented method into an instrument.

### New DyMS method - Enhanced Possibilities

The H<sub>2</sub>S Analyser 320 measures dissolved and evolving H<sub>2</sub>S, mercaptans 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 Analyser 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 Analyser 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.



 **PSL Systemtechnik**  
Germany

PSL Systemtechnik GmbH  
Baumhofstrasse 116  
D-37520 Osterode am Harz  
Germany

Tel +49 5522 31250-0 · Fax +49 5522 31250-99 · info@psl-systemtechnik.com · www.psl-systemtechnik.com

## Measuring Principle

The measuring principle of H<sub>2</sub>S Analyser 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 a electrochemical sensor. In

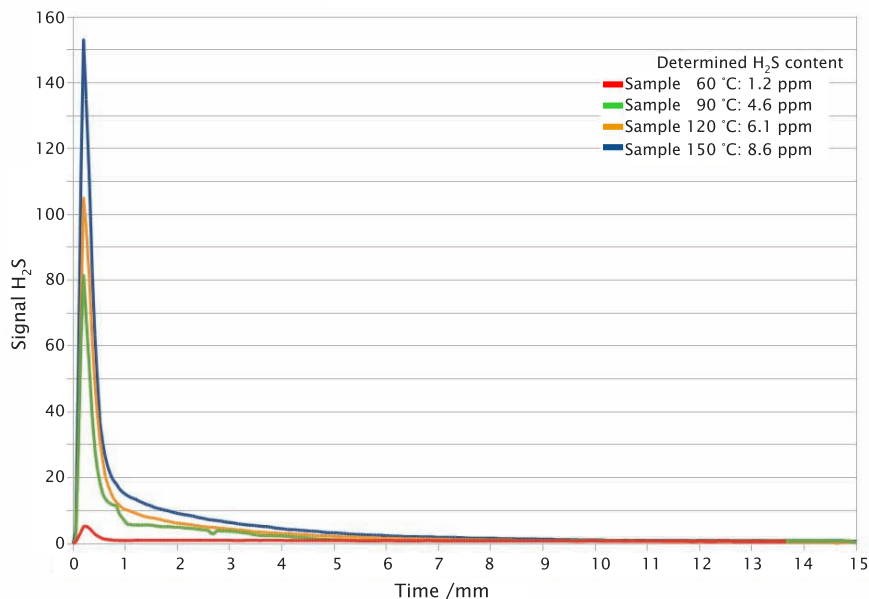
general a measurement requires 15 to 30 minutes. The results will be recorded, calculated and stored.

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

The set-up of H<sub>2</sub>S Analyser 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.

Influence of test temperature on determinable H<sub>2</sub>S content  
Tests at 60 - 90 - 120 and 150 °C



## Specifications:

Media:	Bitumen, asphalt, crudes, heavy fuel oils, 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, SO <sub>2</sub> , Mercaptans (optional two other gases)
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
Storage sample container:	Two containers with 160 ml each
Sample viscosity range:	1 ... 3,000 mm <sup>2</sup> /s
Voltage input:	230 V, 50 Hz (other power supply options on request)
Weight:	35 kg
Dimensions (WxDxH):	36 x 43 x 21 cm, height with tubings 49 cm