

# GC955

# SYNTECH SPECTRAS MERCAPTAN AND SULFIDE ANALYSER



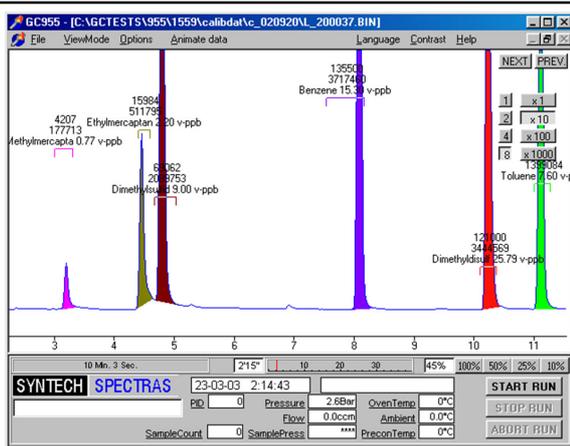
## The Syntech Spectras analyser for measurement of sulfur compounds in ambient air

Many sulfur compounds are toxic.

The smell of sulfur components is a problematic issue at many industrial sites. Sulfur compounds may be emitted at desulfurization in refineries.

Sulfur is also used for producing certain types of paper. Specialized sulfur compounds are produced for odorisation of natural gas. Some essential pharmaceuticals contain sulfur.

At waste deposit sites and at water treatment plants the stench problems are partly due to sulfur components.



Calibration of mercaptans, sulfides, aromates.

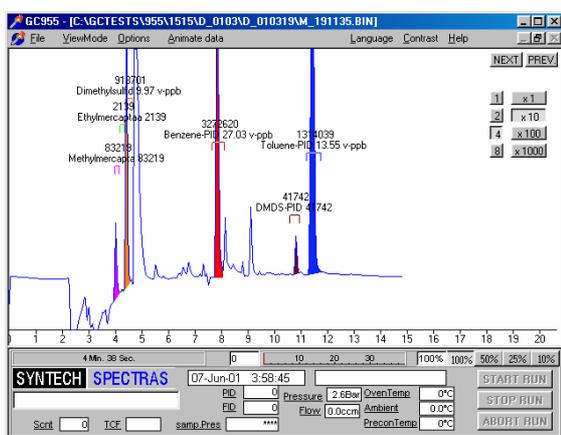
## Hydrocarbon selection

Among the many sulfur components that can be measured two groups stand out: the mercaptans and the sulfides.

Mercaptans: methylmercaptan, ethylmercaptan, propylmercaptan, butylmercaptan etc. (also named thiols),  
Sulfides and disulfides : carbondisulfide, diethylsulfide, Dimethyldisulfide (DMDS), dimethylsulfide (DMS) etc.

Many other sulfur compounds are present in air, for instance thiophene, many of those can also be monitored.

With the same system other components like for example benzene can be measured.



Ambient measurement of mercaptans, sulfides.

## Syntech Spectras GC955 810 Mercaptan analyser

This analyser is a gas chromatograph with a built-in cooled pre-concentration system.

Sulfur components and also other hydrocarbons are first pre-concentrated on Tenax TA then desorbed thermally at a relatively low temperature and then separated on a special strongly separating column combination. The same type of sulfur column is used that is standardly use in the petrochemical industry.

The use of a sample dryer is not advised, to avoid loss of mercaptans by removing them with the water.

The setting for the column has been optimized to avoid interference from higher boiling hydrocarbons. In a standard instrument up to 40 peaks can be quantified.

### Challenges in the analysis of sulfur compounds:

Three issues stand out when monitoring sulfur compounds: all are related to the reactivity of mercaptans. Sulfides are less reactive.

### Reactions of mercaptans in air and on reactive surfaces:

Many customers demand measurement of mercaptans but it is better to also include the sulfides.

Mercaptans are unstable and can be converted by catalytic activity to the more stable sulfides or by oxidation into other compounds.

The disulfides are even more stable and are formed out of the mercaptans.

The smell of these compounds is not very different, so only by measuring all these compounds you can determine the air quality.

### Calibration:

Calibrating the mercaptans is complex: bottles with mercaptans are not stable, except if the bottle had special treatment.

A permeation tube is better. However in reaction with oxygen the mercaptans will turn into sulfides.

The only real option is to dilute with nitrogen.

In that way the reaction cannot take place. However it will take some time to stabilize.

### Sample conditioning:

Drying the sample is good practice, if you use a cooled preconcentration trap. Unfortunately mercaptans cannot be dried with a Perma Pure dryer because a part of them will disappear. If you want to dry the sample, you have to calibrate also in that configuration.

### Analyser details

A standard industrial PC with Windows embedded is used in the GC. The user-friendly software stores all the chromatograms on the hard disk and data can be interpreted easily with this intuitive software. Data can be transferred by network and modem connection. Besides this, analog and digital output options are available to communicate with other data logging systems using several data protocols.

Simple operation, good reliability and low maintenance cost are important to us. With a worldwide network of distributors you can be sure that your instrument comes complete with an individualized training and that support is available to help if you do encounter problems.

## SYNTECH SPECTRAS GC955 SERIES 810 MERCAPTAN AND SULFUR ANALYSER

### TECHNICAL DESCRIPTION

PID detector.  
Lowest detection level depending on component from 0.2 ppb for Methylmercaptan to 0.01 ppb for disulfides. Range: up to 300 ppb. Included items: SERIES 800, special cooled pre-concentration trap at 10 °C, column special sulfur, 4 + 26 mm, 0.32 mm ID, 3 to 5 µm film, cycle time 15 to 30 min, temp program 45°C – 110 °C, flow program typical <3% at 1 ppb (dimethylsulfide, with capillary column)

### REPRODUCIBILITY

Nitrogen, quality 5.0, 4 bar, 10 ml/min

### GAS CONSUMPTION

### DIMENSIONS

19" rack, 5 standard Height Units, depth 43 cm net (W 48,3 D 43 H 22 CM), WEIGHT 20 kg

### POWER DEMAND

230 V AC, 100 VA (115 V AC available) 50/60 Hz

### INCLUDED HARDWARE

Internal industrial x86 based computer, hard disk, full color touchscreen, various data connection options

### COMMUNICATION

Direct control via touchscreen, keyboard or mouse. External data communication via RS232, analog and digital outputs, via TCP-IP.

### INCLUDED SOFTWARE

Windows embedded and GC 955 software. Control of instrument: direct control via keyboard or mouse, or via remote host (RS232 / modem), Ethernet.

Standard available protocols: ASCII-terminal, Hessen, Gesytec, MODBUS, other protocols on request

### Approvals

CE approval for EMC conformity: EN 61000-6-2, EN 61000-6-3, EN 61010, EN 61326

### OPTIONS

It is possible to monitor also benzene and toluene in a 20 minute cycle. In a 30 minute cycle also xylenes can be monitored.

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