

SYNTECH SPECTRAS MERCAPTAN AND SULFIDE ANALYZER



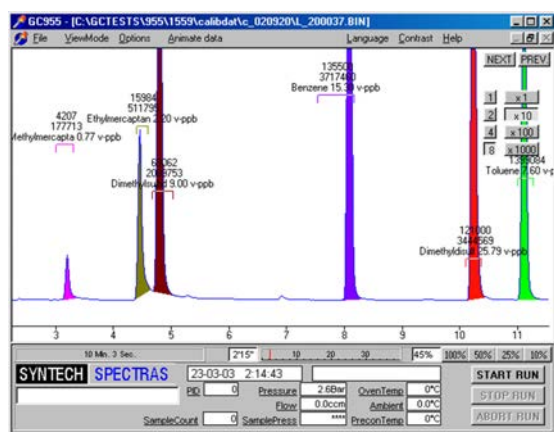
THE SYNTECH SPECTRAS GC955 SERIES 810

MERCAPTAN ANALYSER IS BUILT FOR THE MEASUREMENT OF MERCAPTANS AND OTHER SULFUR COMPONENTS, IN AMBIENT AIR.

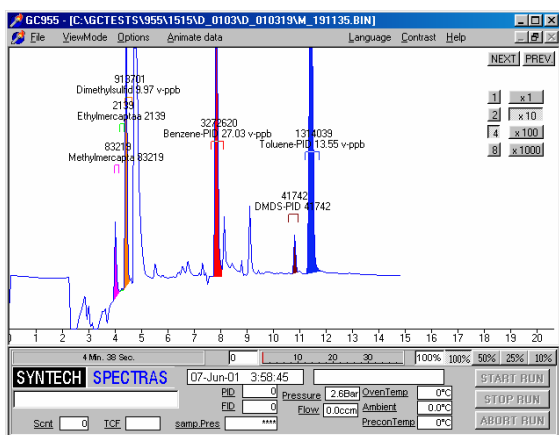
MANY SULFUR COMPOUNDS ARE TOXIC.

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. SPECIALISED 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 sulfur compounds



Ambient measurement of mercaptans, sulfides.

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, dimethylsulfide etc.

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

At the same time also in the same system other components like benzene can be measured.

SYNTECH SPECTRAS GC955 810 MERCAPTAN ANALYZER

The instrument is a gas chromatograph with a built-in cooled preconcentration system. Sulfur components and other hydrocarbons are preconcentrated on Tenax TA, desorbed thermally at a relatively low temperature and separated on a special strongly separating column combination, we use the same type of sulfur column as 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 optimised to avoid interference from higher boiling hydrocarbons. In a standard instrument up to 40 peaks can be quantified.

ANALYSIS OF SULFUR COMPOUNDS:

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

Reactions of mercaptans in air and on reactive surfaces:

Many customers demand measurement of mercaptans. Synspec will normally offer the sulfides as well.

Mercaptans are instable 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 also formed out of the mercaptans.

The smell is not very different, so only by measuring you can determine what was in you air.

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. But mercaptans cannot be dried with a Perma Pure dryer:

50% of them will disappear. IF you want to dry the sample, you HAVE to calibrate also in that configuration

ANALYZER DETAILS

In the GC a standard industrial PC with Windows is used. The user-friendly software stores all the chromatograms on the hard disk and data can be interpreted easily with this intuitive software. Data can also 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 individualised training and that support is available to help if you do encounter problems.

810 Mercaptans and sulfides	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 preconcentration 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 – 110 °C, flow program
reproducibility	typical <3% at 1 ppb (dimethylsulfide, with capillary column)
consumption of gas	Nitrogen, quality 5.0, 4 bar, 10 ml/min
dimensions	19" rack, 5 standard Height Units, depth 39 cm net
power demand	220 V AC, 100 VA (110 V AC available)
included hardware	computer Pentium III class, hard disk ≥40Gb, 2.5", display LCD 10.4" colour touchscreen, various data connection options
included software	Windows XPe, control of instrument: direct control via keyboard or mouse, or via remote host (RS232 / modem), ethernet, data exchange protocols available on demand
Option	One PC can control 2 gas chromatographs
Option	It is possible to monitor also benzene and toluene in a 20 minute cycle. In a 30 minute cycle also xylenes can be monitored

Extra equipment needed	
Calibration gases	Calibration best done by permeation tubes, dilution with nitrogen. If a ppm bottle of sulfur compounds is used, dilution should also be done with nitrogen