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Application Data Sheet

No. **SSI-32**

System Gas Chromatograph

Analysis of Dissolved Gases in Transformer Oil by ASTM D3612B

Keywords: TOGAS, Transformer Oil, D3612, D3612B, method B, Jetanizer, dissolved gases, insulating oil, methanol, TOGAS1

Analysis of the dissolved gases in transformer insulation and cooling oil is critical to ensuring the safety and longevity of the electronics in which they are used. Over time, thermal and electrical stresses cause the formation of various gases dissolved within the oil. This gas chromatograph system is based on the GC-2030 and is equipped to analyze these dissolved gases by ASTM D3612B.

For the analysis, transformer oil is loaded into the sample loop. The 10-port valve rotates and carrier gas pushes the transformer oil up through the oil degasser. The dissolved gas is extracted from the oil, and the 10-port valve is rotated to backflush the oil from the degassing assembly and out to vent. The extracted dissolved gas sample passes through the inlet and to the capillary columns. The light permanent gas is separated from carbon dioxide and heavier hydrocarbons. The light permanent gas components are then separated on a molecular sieve column and elute to the TCD and finally the Jetanizer/FID for detection. The carbon dioxide and heavier hydrocarbons elute directly to the Jetanizer/FID. The system is designed such that there are no coelutions on the Jetanizer/FID.

System Configuration

- One split/splitless inlet
- One 10-port valve
- Two 6-port valves
- Two capillary columns
- Oil Degasser Assembly
- One TCD
- One FID

Analytes

Hydrogen, Oxygen, Nitrogen, Methane, Carbon monoxide, Hydrogen Carbon dioxide, Ethylene, Acetylene, Ethane

Concentration Range

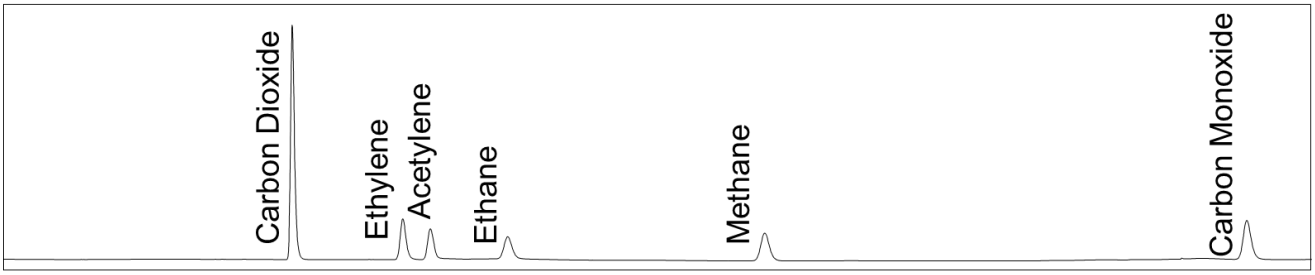
No.	Name of Compound	Concentration Range	
		Low Conc.	High Conc.
1	Hydrogen	20 ppm	10%
2	Oxygen	500 ppm	10%
3	Nitrogen	500 ppm	10%
4	Methane	1 ppm	10%
5	Carbon monoxide	1 ppm	10%
6	Carbon dioxide	1 ppm	10%
7	Ethylene	1 ppm	10%
8	Acetylene	1 ppm	10%
9	Ethane	1 ppm	10%

Detection limit may vary depending on the sample. Please contact us for more consultation.

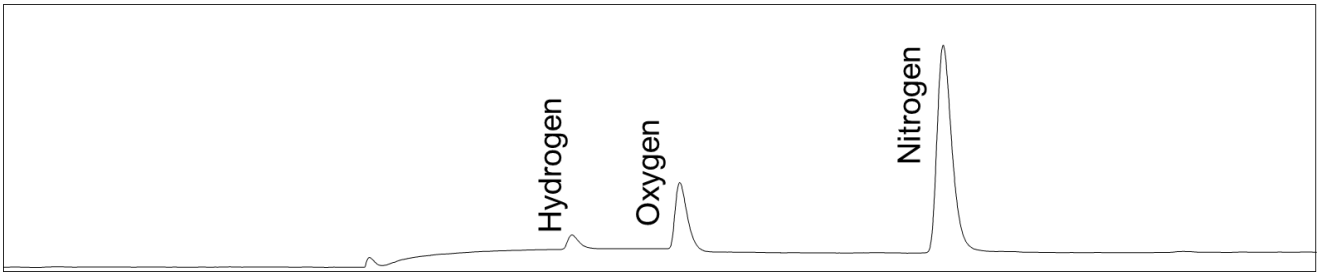
■ System Features

- Minimal sample preparation with direct oil injection
- Rapid analysis in 8 minutes
- Rugged methanization with Jetanizer
- No stop flow events required

■ Typical Chromatograms



FID1 Chromatogram for a standard for light hydrocarbons and permanent gases



TCD1 Chromatogram for a standard for light hydrocarbons and permanent gases

Part number: 220-94959-30

Global Reference: TOGAS1, ADS-032

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