



Application Data Sheet



System Gas Chromatograph

High Speed Refinery Gas Analyzer Nexis GC-2030HSRGA2 GC-2014HSRGA2

This method is for determining the chemical composition of natural gases and similar gaseous mixtures within the composition range shown below. This test method provides data for calculating a sample's physical properties, such as its heating value and relative density, or for monitoring the concentrations of one or more of the components in a mixture. This GC uses a total of four valves and six columns. The sample is introduced into four sample loops for determination. Using a pre-column, C6+ components are back-flushed as a single peak. The valve timing then allows the hydrocarbons C3 through/to C5 to be separated individually through an alumina capillary column and detected by FID. Finally, using MS-5A, O2, N2, CH4, and CO are separated. At the same time, CO2, C2, and H2S are separated using an Rtx-Q plot column and detected by a TCD. The final analysis time is approximately six minutes. The system includes LabSolution workstation software and BTU and Specific Gravity calculation software.

Analyzer Information

System Configuration:

Three valves / six capillary and packed columns with TCD / FID detectors

Sample Information:

 $\mathsf{O}_2,\,\mathsf{N}_2,\,\mathsf{CO},\,\mathsf{CO}_2,\,\mathsf{H}_2\mathsf{S},\,\mathsf{C}_1\text{-}\mathsf{C}_5$, $\mathsf{C}_{6\text{+}}$

Methods met:

ASTM-D1945, D1946, D3588, GPA-2261

Concentration Range:

| No. | Name of Compound | Concentration Range | |
|-----|--------------------|---------------------|------------|
| | | Low Conc. | High Conc. |
| 1 | O2 | 0.01% | 50.0% |
| 2 | N2 | 0.01% | 50.0% |
| 3 | CH4 | 0.01% | 80.0% |
| 4 | СО | 0.01% | 10.0% |
| 5 | CO2 | 0.01% | 30.0% |
| 6 | C2H4 | 0.01% | 10.0% |
| 7 | C2H6 | 0.01% | 10.0% |
| 8 | C2H2 | 0.01% | 10.0% |
| 9 | H2S | 0.05% | 30.0% |
| 10 | C3H8 | 0.01% | 5.0% |
| 11 | C3H6 | 0.01% | 5.0% |
| 12 | i-C4H10 | 0.01% | 1.0% |
| 13 | n-C4H10 | 0.01% | 1.0% |
| 14 | C3H4 | 0.01% | 1.0% |
| 15 | C2H2 | 0.01% | 1.0% |
| 16 | Other Hydrocarbons | 0.01% | 0.5% |
| 17 | C6 plus | 0.01% | 0.5% |

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

System Features

- ·Less than 6 minutes analysis for refinery gases analysis with H2S can be carried out
- •TCD with FID channels for simultaneous analysis
- ·By using split/splitless injector, liquid hydrocarbons can be analyzed by the FID
- Calorific value software is available



Fig. 2 Chromatogram of TCD



Shimadzu Corporation

www.shimadzu.com/an/

For Research Use Only. Not for use in diagnostic procedures. The content of this publication shall not be reproduced, altered or sold for any commercial purpose without the written approval of Shimadzu. The information contained herein is provided to you "as is" without warranty of any kind including without limitation warranties as to its accuracy or completeness. Shimadzu does not assume any responsibility or liability for any damage, whether direct or indirect, relating to the use of this publication. This publication is based upon the information available to Shimadzu on or before the date of publication, and subject to change without notice.

First Edition: November, 2017